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ABSTRACT

These 35 extensive lesson plans for the instructor in a basic training program for accident investigation are intended for use with a student study guide and a manual for administrators and planners, available as VT 019 456 and VT 019 455, respectively. As part of a curriculum package developed by the Center for Vocational and Technical Education after a nationwide survey, this document contains a rationale detailing the needs for accident investigation technicians, an instructional outline, a discussion of facilities and equipment required, and a course description. Included in this teaching guide, which is 3-hole punched for easy insertion into a notebook, are a bibliography, resource lists, and appended resource materials. Intended to develop entry-level skills and to train technicians to identify, collect, record, and report data regarding the driver, vehicle, and environment as they relate to the pre-crash, crash, and post-crash phases of an accident, the course consists of five flexible instructional units. Each lesson plan provides teaching procedures, behavioral objectives, and suggested learning activities. A related document is available in a previous issue as ED 069 848. (AG)

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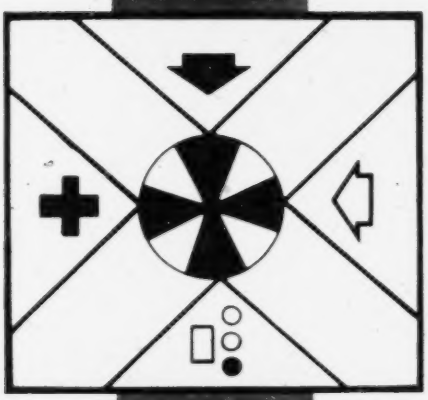

HIGHWAY TRAFFIC ACCIDENT INVESTIGATION AND REPORTING:

BASIC COURSE -

INSTRUCTOR'S LESSON PLANS

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Prepared for:

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WASHINGTON, D.C. 20590

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Prepared for

U.S. Department of Transportation
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U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C.

FOREWORD

Transportation technology demands information. Most critical in highway traffic are the data and facts required to counter accidents. The Center for Vocational and Technical Education, through representation on the Traffic Education and Training Committee of the National Safety Council (NSC), noted the inclusion of accident investigation in the NSC's monograph *Highway Safety Manpower and Training* (18). Accident investigation was likewise noted in *The Role of the Community Colleges in Developing Traffic Specialists and Technicians* (3), a publication of the American Association of Community and Junior Colleges.

The Center conducted a nationwide inventory of sub-baccalaureate-level programs and training materials related to a variety of highway traffic safety occupations. Among priority needs was training in accident investigation and reporting (5).

The National Highway Traffic Safety Administration (NHTSA) in the U.S. Department of Transportation administers nationally a state and community program referred to as Standard No. 18, "Accident Investigation and Reporting." It was in connection with this program that The Center for Vocational and Technical Education was contracted to plan and conduct an in-service instructor training course (6).

Resource materials on accident investigation techniques from a great variety of sources were evaluated as to suitability for a basic course, for intermediate courses, or for an advance course.

The Basic Course: Instructor's Lesson Plans and the *Student Study Guide (17)* are basic-level accident investigation guides referred to and described in the *Highway Traffic Accident Investigation and Reporting: Course Guide (16)*, a manual for administrators and planners. They were developed in conjunction with the national Accident Investigation Instructor Training Institute.

Robert E. Taylor
Director
The Center for Vocational
and Technical Education

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The project, "Accident Investigation Instructor Training Institute," was directed by Ronald Daugherty, assistant director of Field Services and Special Projects, The Center for Vocational and Technical Education. Project associates were Anne C. Hayes and Sandra R. Orletsky, graduate research associates. Kenneth Spooner, research coordinator, Vocational Education Department, University of Northern Colorado, served as evaluation consultant to analyze the evaluation of the project.* Pauline Frey served as typist for the project.

The project staff was assisted by several individuals in the development of the accident investigation curriculum package, either by planning or through workshop participation. Appreciation is hereby extended to the following persons: Aaron Adams of NHTSA, who served as contract technical manager; regional workshop consultants were Bernard T. Fagan, associate professor of trade and industrial education, University of Kentucky, Carroll Hyder, assistant professor, Department of Industrial Education, East Tennessee State University, and Ivan Valentine, professor of vocational research, Colorado State University; Richard Fredericks and John Keryeski from NHTSA, who contributed to the technical review; and Sgt. D. G. Slemmer of the Ohio State Highway Patrol Academy, who contributed to the curriculum package and the final technical editing.

The names of the 64 state and local instructors who represented 35 states at the regional workshops appear in the Appendix. These instructors also authored the original draft of the Instructor's Lesson Plans for the curriculum package. The lesson plans in turn were compiled and edited by the project staff.

The local host institutions for the five workshops were:

- The Atlanta Area Technical School, Atlanta, Georgia
- West Campus, Denver Community Colleges, Denver, Colorado
- City College of San Francisco, San Francisco, California
- William Rainey Harper College, Palatine, Illinois
- Manchester Community College, Manchester, Connecticut

The technical reviewers of the Instructor's Lesson Plans were selected from the participants at the five workshops. They were: Glenn E. Clark, Karl Hutchinson, John Knight, H. Wayne Overson, Wayne Seal, and Irvin B. Smith.

* Information about this project can be found in Daugherty, Ronald D.; Hayes, Anne C.; and Orletsky, Sandra R. *Accident Investigation Technician Instructor Training Institute—Final Report.* Washington, D.C.: National Highway Traffic Administration, 1972, available from the National Technical Information Service.

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HIGHWAY TRAFFIC ACCIDENT INVESTIGATION AND REPORTING: BASIC COURSE—INSTRUCTOR'S LESSON PLANS

ACCIDENT INVESTIGATION

Function. The growing need for accident investigation technicians in the United States has been established by various federal, state, and local government and law enforcement agencies. The manpower estimates for accident investigation technicians by 1977 are for 12,000 full- or part-time persons employed by state or local agencies (*Highway Safety Occupational Program Development Guide* by Daugherty, Brooks, and Hyder, July 1971).

In recognizing the need for a coordinated highway safety effort, the Highway Safety Program Standard No. 18, "Accident Investigation and Reporting," has been developed by the U.S. Department of Transportation (Appendix). The new standard calls for all states to develop uniform comprehensive systems for the collection of traffic accident data. The training of basic-level accident investigation technicians to identify, collect, record, and report the cause of accidents is an essential phase of the overall highway safety program.

The new Standard No. 18 made it necessary to locate substantive resource materials on accident investigation and reporting at the basic level. The principal sources tapped in the search for these materials were unpublished as well as published studies conducted under auspices of the National Highway Traffic Safety Administration. These studies consist of (1) a task analysis for accident investigation technicians conducted for the National Highway Traffic Safety Administration by Battelle Memorial Institute, Columbus, Ohio, and (2) the training course materials developed by the Cornell Aeronautical Laboratory for training multidisciplinary teams of accident investigators. Since only a limited number of resources were located on the topic of accident investigation, those who authored the original lesson plans relied heavily upon materials from which they received their training.

Other principal sources utilized in developing the curriculum model were: the investigation and reporting procedures for the extensive files of incoming reports housed in the NHTSA, an analysis of the performance skills required, and course materials used in the training of the national research network of "multidisciplinary go-team" investigators. Complete references are to be found in the *Accident Investigation Technician Instructor Training Institute-Final Report*, available from the National Technical Information Service (6).

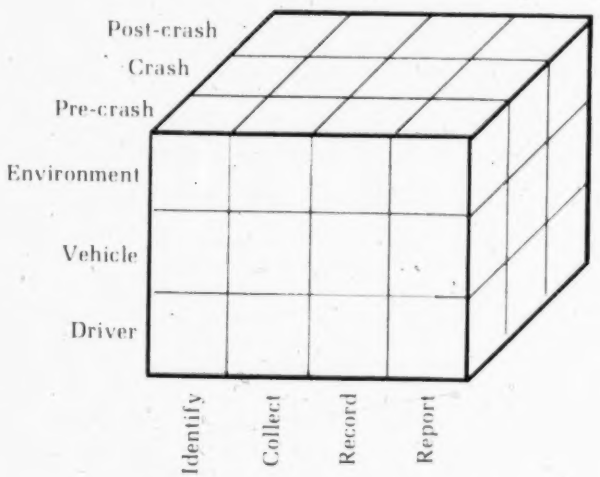
Figure 1 illustrates the adapted NHTSA model developed to train a basic-level accident investigation technician. The following is a description of the model.

There are:

1. Three phases of accident investigation, consisting of pre-crash, crash, and post-crash
2. Three components of accident investigation, environment, vehicle, and driver
3. Four functions of the basic-level accident investigation technican, involving the skills necessary to identify, collect, record, and report (15)

Figure 1

Matrix for Highway Traffic Accident Investigation and Reporting Curriculum



Information gained about the pre-crash phase contributes to understanding accident avoidance, that gained about the crash phase contributes to injury prevention, and the knowledge learned about the post-crash phase helps reduce the severity of accidents.

Skillfull identification provides quick and complete surveys and analysis of complex situations. Selected items and conditions are accurately designated and defined. Skillfull collection requires priority decisions and results in the quantification and qualification of accident information times, frequencies, amounts, and distances. Skillful recording provides input materials to allow the preparation and presentation of summaries of investigations of accidents. Field notes, sketches, and photographs are required documentation. Skillful reporting provides the end product or service. Oral briefings or written documentation are invaluable to understanding and allow continuing efforts for reduction of fatalities, injuries, and property damage.

Current literature in the field of accident investigation and reporting describes practices

from the crudest to highly scientific computer modeling. This, along with the logical roles of the several agencies in both the private and public sectors, was considered in the determination of scopes and content of a basic-level course in accident investigation and reporting. A major source of information used in the development of the content of the lesson plans was J. Stannard Baker's *Traffic Accident Investigation Manual for Police.*

Manpower. It proved relatively easy to identify numbers of scientists and researchers, engineers, educators, and other authorities in the field. Labor force inventories and projections dealing with nonprofessional, i.e., technical manpower, applied man-year equivalencies or levels of effort rather than head-count data. Accident investigation and reporting was found at present to be a function within a broader function such as law enforcement. Police officers, among other duties, do accident investigation. A number of jobs or positions such as traffic engineering technicians and emergency vehicle dispatchers require, among other skills, a high degree of one or more accident investigation skills.

An additional type of job classification may be observed in public service or governmental agencies. It includes such positions as intern, assistant, or aide. Qualifications are comparable to the police patrolman, the emergency medical technician, the driver license examiner, traffic records, programmer, and others. It is for such in-service state and local agency personnel that training in skills of basic-level accident investigation and reporting will prove most beneficial.

Potential employers for accident investigation technicians can be found in the four general areas: public service, commercial, manufacturing, and government. A partial listing of potential employers in each area might be as follows:

Public Service
Insurance boards
State police
Local police
City planners
Highway departments
Hospitals
Ambulance companies

Commercial
Legal firms
Detective agencies
Hospitals and clinics
Medical associations
Medical schools
Consulting companies
Insurance companies
Casualty companies
Adjustment agencies
Automotive engineering firms
Fleet operations
Ambulance companies
Construction firms
Architectural firms
Consumer research operations
Publishers
Freight carriers

Manufacturing
Automotive manufacturers
Parts manufacturers
Tire manufacturers
Automotive suppliers (glass, chemicals, systems, etc.)

Government
City planners
County road commissions
Consumer research agencies
Government research
Traffic institutes
Highway research boards
Safety council
Medical schools
Government committees
Federal highway agencies
Federal carriers

Instructor Institute. A series of five regional instructor training institutes were conducted during the spring of 1972. The two overall purposes of the workshops were curriculum materials development and the improvement of participants' teaching skills. There were a total of 64 workshop participants representing 35 states. These individuals were primarily involved with some phase of police training, police science, accident investigation, and traffic engineering programs at community colleges, police academies, or state highway patrol academies. The average participant had slightly more than four years of accident investigation experience in addition to four years of teaching experience.

Of the 35 modules illustrated in the Figure 2 model, numerous modules isolated skills that obviously were identical to skills required of qualified police traffic patrolmen, although often at a higher level of sophistication than required to meet the objectives of this course. It was for this reason that instructional personnel, law enforcement programs of selected community colleges, and police academies were requested to contribute their skills and experience to the further development of lesson plans and student materials for this basic course. It required, in many instances, that new, different, and additional lesson material be developed and substituted for familiar long-established lesson units that emphasized the law enforcement function.

The schedule used to develop curriculum materials was as follows: (1) develop a curriculum model to include all available data and project objectives, (2) develop a proposed course content outline for curriculum, (3) establish criteria and select teacher educator consultants, (4) establish criteria and select workshop participants, (5) plan and conduct five regional workshops to develop assigned lesson units, (6) edit and revise draft lesson units, and (7) plan and conduct the follow-up technical editing workshop.

TRAINING PLAN

Purpose of the Instructor's Lesson Plans. This publication has been prepared in order to assist instructors in day-to-day instruction and to provide a variety of suggestions for student involvement centered around behavioral objectives and performance standards.

Included in this publication is information related to the field of accident investigation, a training plan with a course content outline and model schedule, facilities and equipment requirements, instructional materials, student study guide, information, and the 35 lesson plans that comprise the curriculum. The appendix contains further information regarding accident investiga-

tion, curriculum development, and instructional and evaluation aids for use by the instructor and the student.

These lesson plans provide direction for developing the funcitons of accident investigation whether it be conducted by a police officer or a non-law enforcement person. To use this curriculum for specialized programs, instructors will need to make some additions and adaptations to the materials contained herein.

Objectives. The curriculum package has two major objectives: (1) to develop the skills essential for an accident investigation technician to possess for a basic-level position and (2) to train basic-level accident investigation technicians to identify, collect, record, and report data regarding the driver, vehicle, and environment as it relates to the pre-crash, crash, and post-crash phases of an accident.

The technical functions are performed most effectively when an understanding and appreciation of related theories and knowledge are possessed.

The course is designed to emphasize the skills of investigation while avoiding direct involvement with actual accident situations, vehicles, or drivers. It is not dependent upon legal authority nor requirements to present evidence in court. On the other hand, provision is made in the Student Study Guide through a Job Activity Sheet for trainees who, in the normal course of performing their work, have occassion to apply skills in an actual accident situation. The course assumes the trainee possesses normal abilities and understandings of the psycho-physical nature of humans and common performance characteristics of vehicles, and that he is familiar with the system of urban and rural streets and highways.

The demonstration nature of the training precludes extensive treatment of theoretical materials or any but routine investigative functions. Examples are alcohol blood-equivalent testing and speed calculation by test skids.

Limitations. The content of the curriculum is geared to train personnel for basic-level accident investigation technician positions. Therefore, the curriculum is not appropriate for training higher level technicians, such as experienced members of multidisciplinary accident investigation teams.

A further limitation is imposed by the fluctuating "state of the art" of accident investigation, which provides parameters within which this curriculum package must fit. Although this curriculum package is designed to teach the skills of accident investigation, it is not necessarily intended to be law enforcement-oriented. This orientation may pose some problems in implementing the curriculum at some institutions.

Course Content. The accident investigation course is organized to provide instruction in skills associated with facts and information identification, collecting, recording, and reporting. (See Figure 2. The course outline corresponds to the curriculum model previously described in Figure 1.)

The course consists of five lesson units involving a flexible number of training hours. The hours requirement was designed to be unspecified in order to provide the maximum flexibility for the curriculum. The first unit serves as an overview of the highway transportation system, emphasizing the purposes, responsibilities, and objectives of the accident investigation technician as well as a general introduction to planning the investigation.

The second unit stresses the identification function of investigation as it relates to the driver, vehicle, and environment in examing for pre-crash, crash, and post-crash contributory conditions and causes as well as determining definitions and classifications.

The third unit emphasizes the learning of the skills an investigator must have in order to collect data thorugh interviews, measurements, photography, and determining speed estimates.

The fourth unit introduces the methods of recording accident data gathered through photography, field sketches, and interviews.

The fifth unit emphasizes concepts involved in accident reconstruction, reporting the investigation of an accident, and preparing and presenting the accident report.

Lesson Plans. The lesson plan topics are oriented to teacher and student activities, stressing skills required for an accident investigation technician to possess when identifying, collecting, recording, and reporting the necessary data as it relates to the driver, the vehicle, and the environment. The final lesson provides a simulated (mock) accident investigation situation in which the student can demonstrate the technical skills he has acquired through the course.

Each lesson provides an application phase to insure that the student becomes actively involved in the learning process.

The training class can be exposed to real life traffic accidents at the discretion of the instructor.

The course may be offered in conjunction with other courses in major areas, such as law enforcement, automotive, civil engineering, emergency medical care, etc.

Figure 2 presents a detailed outline of the course content for traffic accident investigation technician training. A descriptive statement for each lesson topic can be found in the Student Study Guide.

Figure 2
COURSE CONTENT OUTLINE FOR HIGHWAY TRAFFIC ACCIDENT INVESTIGATION AND REPORTING: BASIC COURSE—INSTRUCTOR'S LESSON PLANS

Lesson	
	Introduction
1	Highway transportation system
2	Purposes, responsibilities, and objectives of the accident investigator
3	Plan the investigation
	Identify
4	Definitions and classifications
	The driver
5	Identify the driver
6	Identify pre-crash conditions of the driver, with reference to alcohol/drugs
7	Identify for pre-crash and post-crash conditions of the driver, with reference to emotions, fatigue, and physical illness
8	Identify behaviors as driver personality and attitude
9	Identify natural abilities of the driver
10	Identify learned capabilities of the driver
11	Identify persons other than the driver as potential sources of information
	The vehicle
12	Identify vehicle types and components
13	Identify pre-crash, crash, and post-crash vehicle damage and defects
14	Identify for sources of injury to occupants and or pedestrians
	The environment
15	Identify and determine environmental attributes
16	Identify pre-crash marks on the roadway, shoulder, and environment
17	Identify position and angle of infliction
18	Identify debris
19	Identify vehicle parts with crash marks on the roadway and surrounding environment
20	Identify area of impact from marks on the roadway
21	Identify post-crash roadway marks in relation to the accidents
	Collect
22	Pre-crash and post-crash actions and reactions
23	Interview
24	Collect and preserve physical evidence
25	Make relocation measurements
26	Photograph
27	Make speed estimates
	Record
28	Introduction to methods of recording data
29	How to record via photography
30	How to record via field sketches
31	How to record via notes from interviews
	Report
32	Reconstruction principles and causation analysis
33	Report the investigation of an accident
34	Prepare and present the accident report
35	*Simulated (mock) Traffic Investigation*

Model Schedule. Seventy hours of instruction are suggested. This represents the equivalent of a one-semester course with two-hour sessions twice each week. Figure 3 presents a model with hours assigned to classwork and laboratory or field work.

Figure 3
HIGHWAY TRAFFIC ACCIDENT INVESTIGATION AND REPORTING CURRICULUM MODEL SCHEDULE

Hours		Units	Lessons
Classwork	Lab or Fieldwork		
1		Introduction	1–2
3	8	Identify	4–21
5	13	Collect	22–27
5	13	Record	28–31
5	12	Report	32–34
1	4	Summary and Completion	35
20	50		

Provision is made for in-service students whose routine duties provide real life experiences in one or more of the investigative skills, e.g., photographing accidents. Validated entries in the course's Job Activity Sheet may be substituted for laboratory or field work exercise. (See Student Job Activity Sheet, Figure 4.)

Methods of Instruction. The curriculum package is designed to assist the instructor in teaching the skills and knowledge necessary for the preparation of basic-level accident investigation technicians. It is emphasized that teaching should consist mainly of demonstration, with learning occurring through application and practice. Each lesson plan has a specific set of behavioral or performance-based objectives that attempt to encourage learning through student activity.

The lessons are not designed to be a complete blueprint or "how-to-do-it," step-by-step manual but are the best available expert suggestions for teaching the skills and knowledge necessary in the accident investigation field.

Figure 4

Highway Traffic Accident Investigation and Reporting Job Activity Sheet

Lesson 25: Make Relocation Measurements

Student Name: _____

Instructor: _____

Assigned Activities	Student Description of Activity As Performed (attach necessary evidence)	Date Completed	Instructor Comments and Evaluation
1. Submit three field sketches made at simulated or at actual accident scenes demonstrating the use of each of the following methods for making relocation measurements including from what point and to where they should be made: a. Coordinate b. Triangulation c. Reference point Briefly describe why the particular method was selected for each example. 2. Other activities			

The curriculum materials are designed to meet the needs for preparing an individual at a basic-level accident investigation position. The objectives for each lesson plan are written in behavioral terms in an effort to reinforce the concept of learning through student-oriented activity as opposed to teacher-oriented activity. Included in this guide is an example of the job activity sheet that can serve as an individual progress chart for each student as he masters the skills necessary for a basic-level accident investigation technician.

Reading references are identified in the Student Study Guide for those students who desire in-depth study. Independent study may be required, depending upon the background the student brings into the course.

The editors envisioned something other than the traditional setting of the classroom when designing this curriculum. Mock simulation settings of traffic accidents, junk yards, and field trips were viewed as more effective settings for the successful implementation of this curriculum. While the nontraditional classroom poses more of a problem for the instructor than the student, it was felt that this different and activity-oriented setting would do more to encourage and motivate the student to learn the lesson material through an application process. Much of the effectiveness of the course depends upon field work and group tours conducted to provide extemporaneous observations and narration.

Use of Lesson Plans. All lesson plans in this publication are designed to serve as guidelines for the instructor to use in teaching the 35 lesson topics on accident investigation. Creative approaches and innovations in teaching techniques are encouraged in an effort to stimulate learning and motivate the student. The objectives of each lesson unit have been written in behavioral terms. The lesson plans, therefore, reflect a student orientation and not necessarily an instructor orientation. Wherever possible, student activity and involvement are suggested. While the traditional lecture method is the easiest for the instructor to rely upon, the most effective learning occurs when the student is motivated through involvement in action-oriented activities. Learning by doing rather than learning by telling is a guideline suggested for this curriculum.

By informing the student at the outset of the instructor's objectives for each lesson unit, both the student and the instructor can work together to accomplish the stated objectives.

The use of this publication can be enhanced by incorporating the use of the Student Study Guide, a companion publication developed for use by the student as reference text materials and an activity sheet charting individual accomplishment and progress.

FACILITIES AND EQUIPMENT

Course arrangements are based on the assumption that a classroom will be required. It will serve

as a staging area and provide space for briefings, paperwork, and practice with equipment and instruments.

In general, drivers, vehicles, and roadways, which are always and everywhere at hand, will provide training resources. There is no necessity for the training groups to be involved in real life traffic accidents. Training in the skills, however, requires that drivers and driving behavior be observed and analyzed, that crash-damaged vehicles be studied, that injuries be noted, and that typical local highway characteristics and configurations become familiar. Field work under tightly controlled conditions is an essential requirement in meeting the objectives of the course. Arrangements with auto wrecking concerns, garages, street departments, ambulance crews, and court authorities, are limited only by local ingenuity.

Standard classroom equipment is required, including chalkboards, opaque projectors, tape recorders, and increasingly common portable TV camera and playback equipment.

The identification unit of the course will require handbooks, specification charts, blueprints, labeling, and marking devices.

The collection unit of the course will require measuring instruments as tape lines, marking crayons, labeling and marking devices, camera, specimen containers, and a watch. The recording unit will require sketch pads and sketching equipment, notebooks, camera, tape recorder, report form blanks, typewriters, and copying machines. The reporting unit will require drawing equipment models and mockups, maps, typewriter, and projection equipment.

Sufficient transportation for the class must be scheduled when field work involves travel to designated sites in the locality and for frequent observation and monitoring tours.

INSTRUCTIONAL MATERIALS

Instructional materials are the published Basic Course—Instructor's Lesson Plans and the Student Study Guide. Great reliance is placed on the individual local instructor to search out and inventory meaningful current material to enrich each unit. Examples are photographs, slides, film specimens, investigation files and reports, and report forms. Locations for field work will have to be identified, arranged, and scheduled.

The instructor may be expected to possess an assortment of textbooks in the field of accident investigation. Required outside reading is at a minimum but should be available to students who (1) possess less than usual experience or knowledge of driver, vehicle, or roadway, (2) desire to study theoretical aspects of accident investigation, or (3) desire to study specific applications to a particular jurisdiction or agency, such as police testimony in court cases.

Instructor's Lesson Plans. A lesson plan is provided for each of the 35 units of the course. The plans are organized in a uniform format to provide ready familiarity to the instructor throughout the course and to be convenient to follow while actually teaching.

Lessons are of two types—the manipulative skill lesson and the related technical information less. In both instances, lessons are organized for presentation in a sequence of phases or steps: (1) preparation of the learner, (2) presentation, and (3) application with suggested activities for student evaluation.

Published material references in most lesson plans are included to assist in the instructor's personel development and review. They are not intended for student reading assignments. Entries are limited to those readily obtainable to the instructor.

The Student Study Guide. This publication is intended to serve as a companion document to the Basic Course: Instructor's Lesson Plans. In it the student is provided with the statement of the course objectives, a brief description of course content, the course outline of lessons, the statement of lesson objectives, the assigned application, and the criteria for student accomplishment. Equipment, tools, and supplies are indicated.

As the course progresses, loose-leaf handout sheets can be provided by the instructor for inclusion in the Student Study Guide.

A feature of the Student Study Guide is the Job Activity Sheet, which provides those students with the opportunity to put the skills of the course into use outside the class and to confirm and record the experience for recognition by the instructor and employer. (See Figure 5.)

Instructor-Developed Aids. While a variety of visual aids and equipment could be used to augment the lesson units at the discretion of the individual instructor, the development and use of supplemental information has been left up to the individual instructor. Some suggested equipment and visual aids are included with the lesson topics in the Basic Course—Instructor's Lesson Plans.

Much of the graphic arts material, such as charts and graphs, rapidly becomes obsolete. The same may be said for photographic materials. The instructor will find many sources in pamphlets, journals, and newspapers. For greatest effect-

iveness, material should use local drivers, vehicles, and highways so they will be familiar to the student. Exceptional items of student work from previous classes provide a rich store of instructional material for future use. Any slide collection used should be continuously extended and updated.

Reference Text Materials. No one specific textbook has been selected for use as an instructor's or student's reference in implementing the highway traffic accicent investigation and reporting curriculum. The instructor may recommend in specific cases that a student do study or research from a textbook that is readily available. There are a number of recommended commercially available texts that could be used to supplement curriculum development. References from J.S. Baker's *Traffic Accident Investigation Manual* have been cited for student use in connection with the Basic Course—Instructor's Lesson Plans. Suggested texts and references are listed in the Bibliography of this publication.

TRAINING EVALUATION

Evaluating the student's performance to ascertain whether he has met each objective can be accomplished in several ways. Each lesson topic has incorporated within it some form of application activity to determine an adequate performance level. There has been a concerted effort to restrict the use of the traditional true/false, multiple-choice, or essay examination in this suggested curriculum. However, some topics more readily lend themselves to creative, nontraditional performance-level testing than others. The instructors are encouraged to use the application activities or performance techniques suggested in the lesson units rather than rely upon the standard testing methods.

The success of the course is determined by the ability of the student, upon employment, to deliver a product of a stated quality in an appropriate period of time, i.e., correct identification, accurately collected measurements, a legible sketch, or a factual written report. This is differentiated from the testing of the student's retention of information or knowledge.

The Job Activity Sheets allow evaluation of the student's product or accident investigation process. The course should be analyzed and evaluated at intervals to confirm that three factors are operating satisfactorily. Those factors are that: (1) the course content is appropriate for the aptitudes and abilities of the trainees; (2) only trainees who are capable of achieving the course objectives are enrolled; and (3) the instructions, including the facility and equipment, are all conducive to the anticipated learning and performance.

Provisions have been made for evaluating both the instructor and the course through the use of the Student Opinion of Teaching and Course evaluation form. This form can be found in the Appendix. The suggested use of this form is primarily for course revision over improvement of instruction.

A local advisory committee will prove very effective in not only evaluating the training course but also in providing initial guidance and continuing support.

HIGHWAY TRAFFIC ACCIDENT INVESTIGATION AND REPORTING: THE BASIC COURSE— INSTRUCTOR'S LESSON PLANS

LESSON PLAN 1

UNIT: Introduction

LESSON PLAN TOPIC: Highway Transportation System

OBJECTIVES: The student will show his understanding of the overall highway transportation system by being able to:

1. Describe the highway transportation system
2. List the major problems involved with highway transportation
3. Explain the four contributing factors to traffic accident and the elements within each factor
4. Explain the relationship of the investigation task to the four approaches to accident control or prevention.

PREPARATION OF THE LEARNER:

Since this will probably be the initial lesson it will be important to put the group at ease, make them acquainted, and take care of administrative details. The following activities are recommended:

1. Make desk name plates
2. Introduce self and give background
3. Ask students to introduce self and give background (try to evaluate prior learning of each student in accident investigation)
4. Make explicitly clear what the overall objective of the entire course is and move to the first lead question. (Try use of humor at this point to "break the ice" for you and the student.)

PRESENTATION:

Instructor's Note: Use some form of A/V to start, stimulate, or channel discussion.

I. Elements of the highway transportation system

A. The make-up of the highway transportation system—national and local

1. Statistics on *types* of vehicles
2. Statistics on *types* of roadways
3. Regulation agencies

a. Federal laws
b. State and local traffic codes (statutes)
c. Interstate Commerce Commission
d. Licensing
(1) Vehicle
(2) Driver

II. Problems related to the highway transportation system

A. Problems presented by highway transportation system as they relate to both federal and local situations

1. Congestion
2. Pollution and environmental destruction
3. Accidents

    a. Statistics on death
    b. Statistics on injury
    c. Statistics on property damage

III. Ways are available for attacking the traffic accident problem and the effectiveness of each area

A. Means of attacking the accident problem

1. Education
2. Engineering
3. Enforcement
4. Enactment

IV. Making the four E's work

A. Investigation—an input

1. Need for investigation

    a. Facts on causes
    b. Facts on conditions
    c. Facts on results

2. Historical background of the investigative function

    a. As a role of the police function
    b. As a traffic engineering function
    c. As an educational function (driver education)

3. Factors for investigation
(Note: Refer to matrix for highway traffic accident investigation and reporting curriculum)

    a. Driver
    b. Vehicle
    c. Environment

Note: May use statistics to emphasize percent of causation attributed to each.

APPLICATION:

Instructor: Use a series of slides, instructor prepared or commercially prepared, which will depict various aspects of the highway transportation system, its problems, and accident scenes with appropriate narration to explain the scene.

1. Ask students to identify and discuss what they observe in each slide with reference to elements of system, problems, accident factors, and possible corrective action where applicable.

2. Have students discuss their observations with particular emphasis on their ability to use information given in PRESENTATION.

SUGGESTED REFERENCES:

1. Arend, Russell J. *Traffic Accident Investigation Responsibilities of County Law Enforcement Agencies.* Washington, D.C.: Automotive Safety Foundation, 1967.

2. *Police Traffic Responsibilities.* Washington, D.C.: The Management and Research Division, International Association of Chiefs of Police, 1969.

3. The National Safety Council. *Traffic Safety.* Chicago, Illinois: The National Safety Council. (monthly)

LESSON PLAN 2

UNIT: Introduction

LESSON PLAN TOPIC: Purposes, Responsibilities, and Objectives of the Accident Investigator

OBJECTIVES: The student will be able to:

1. Explain the purpose of an accident investigator at the scene of an accident to the instructor's satisfaction

2. List the basic responsibilities of the accident investigator as outlined in the lesson

3. Explain the objectives of an accident investigator with the use of the four "E" concept.

PREPARATION OF THE LEARNER:

Set the stage: If you do have the responsibility for investigating traffic accidents, you will need to examine the accidents systematically and with some professional skill. We know that:

1. all accidents are made up of a series of events
2. certain links in this series of events are very important to determine the cause
3. it is hard to talk about the cause because at times, there is more than one cause

Highway and traffic pattern improvement must be based upon accurate, factual information. But you cannot gather this information unless you know the part you are to play in the total traffic safety team. For you to perform efficiently you must know what your job is before the emergency arises.

Can you visualize this accident scene?

1. You are the investigator with no formal training
2. It is 11:15 p.m. and you go off duty at 11:30 p.m.
3. You arrive at the scene of the accident at the edge of the city limits
4. The cars are smoking
5. You see three motionless bodies
6. There are three injured persons pinned in the vehicle
7. The highway is blocked
8. Bystanders are asking questions and making suggestions

What training do you need?

1. *P Purpose* Why are you there?
2. *R Responsibilities* What are you trying to do?
3. *O Objective* What are you trying to accomplish and why?

Are you a PRO investigator? You can be! Let's discuss these questions.

PRESENTATION:

I. **Purpose** of the investigator
Why are (you, we) there?

A. Statute requirements to investigate:

1. Death
2. Injury
3. Property damage extent as required by law or where one vehicle must be towed away (national standard)
4. State law
5. City ordinance
6. County regulations
7. Law requirements

B. Departmental policy or procedure:

1. Rules set out in your department regulations
2. Special needs

C. Investigation:

1. Careful and systematic inquiry into the facts and circumstances of accidents to discover causes.

D. Determination of the cause:

1. Not really an accident
2. Not an act of God
3. There is a cause or causes
4. We do not have to accept accidents as the price of convenience of the automobile
5. Accidents can be prevented
6. Accidents are the result of certain unexpected causes

II. **Responsibilities** of the accident investigator
What are you going to do?

A. Proceed to the scene quickly but safely

B. Secure accident facts

1. In writing
2. In sketching
3. In photographing
4. In interviews
5. In collecting

C. Identify, collect, record, and report all pertinent evidence

D. Meet state and local requirements

1. Statute laws
2. City ordinances
3. County ordinances
4. Departmental policy and procedure
5. Supervisors' requirements

III. **Objectives** of the accident investigator
What are you trying to do as an accident investigation technician and why?

A. Enforcement:

1. A complete investigation will suggest:

   a. Cause(s) of the accident
   b. Violations of law
   c. Evidence facts for use in court against violator
   d. For proper deployment of manpower

B Education

1. A complete investigation will suggest needs for:

   a Driving improvements
   b. Hazard driving areas
   c. Basic needs for education in driver improvement areas

C. Engineering

1. Professionals use investigative information to:

   a. Locate problem areas
   b. Determine where engineering work needs to be focused
   c. Make studies of the problem location

D. Enactment

1. Results of investigations enable lawmakers to determine:

   a. Need for additional laws
   b. Revisions in present laws
   c. Legislation that is more applicable to problem
   d. Research basis for traffic records systems to several state/local agencies (e.g., motor vehicle administration, public health—emergency medical and highway department)

APPLICATION:

Instructor: Use a transparency, chalkboard, or felt board, etc., and have students summarize the purpose, responsibilities, and objectives of the accident investigator.

1. Display a "P" and ask students:

   a. What does the P of PRO represent? (Purpose)
   b. Why are you at the accident scene? (Reconstruct the Purpose as set out in outline)

2. Display an "R" and ask students:

   a. What does the R of PRO represent? (Responsibilities)
   b. What are you going to do at the accident scene? (Reconstruct the Responsibilities as set out in the outline)

3. Display an "O" and ask students:

(Continued on next page)

APPLICATION: *(Continued)*

a. What does the O of PRO represent? (Objective)
b. Now that you are at the accident scene, what are you going to do and why? (Reconstruct the Objectives from the outline)

4. What are the (4) four "E"(s) relating to accident investigation? (Place 4 "E"s on board.)

   a. Ask students to name each. Put the word on felt beside an "E" and ask students to describe how accident investigation technicians assist in each.

      (1) E Enforcement

      (2) E Enactment

      (3) E Education

      (4) E Engineering

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. *Military Police Traffic Control Supervision.* Fort Gordon, Georgia.

3. Your State Statutes, City, and County Ordinances (Traffic Laws)

LESSON PLAN 3

UNIT: Introduction

LESSON PLAN TOPIC: Plan the Investigation

OBJECTIVES: The student will be able to:

1. Explain briefly the value and purpose of planning the accident investigation task

2. List and describe the six phases of planning for accident investigation.

PREPARATION OF THE LEARNER:

Planning is foresight or looking ahead to prepare ourselves to deal with an anticipated problem. "Everyone has 20-20 hindsight," is a famous quote. It is hindsight that tells us we should have taken the lens cap off the camera. It is hindsight that tells us we should have gotten "just one more" measurement at the accident scene. Hindsight is a poor replacement for foresight. Some investigators, when called to the scene of an accident, have their own idea of how they should proceed. Sometimes their ideas click and they are able to record all the evidence needed for their organization. Other times they let some important item slip by and later find that it is needed in order to put the investigation together. You can compare an investigation to a jigsaw puzzle. All the pieces must fit together in order to form a completed picture. The way to accomplish this end is to have a step-by-step procedure that must be followed A planned program of accident investigation is the only answer.

PRESENTATION:

I. Purpose for planning the accident investigation

A. Avoid duplication of task

B. Helps call attention to important things

C. Avoids forgetting to do a task

D. Helps remind us of first things first

E. Helps us make a better impression on others

F. Provides a guide to actions

G. Saves time

H. Helps us to do the best job possible

II. The six stages of planning the accident investigation (6)*

A. Preparation

1. The vehicle to be used for accident investigation

a. Readily available
b. Gassed and serviced

*All subsequent footnotes refer to bibliographical entries.

2. Equipment stored in vehicle

   a. First aid kit
   b. Tape measure
   c. Camera (loaded)
   d. Accident report forms
   e. Witness forms

3. On notification of an accident

   a. Usually by phone or radio

      (1) Who called?
          —Name and address plus their phone number
      (2) Where is the accident?
      (3) Possible injuries?
      (4) What kind of accident?
      (5) Is it necessary to travel to the scene, or will the scene be cleared by the time you get there?
      (6) Arrange for assistance if necessary
      (7) Drive to the scene safely
      (8) As you approach the scene

          (a) Watch for vehicles leaving the scene
          (b) Look for pedestrians as possible witnesses
          (c) Check for possible obstructions that could be a causation factor

B. Immediate actions

1. Immediate action includes tasks which must be done in order to preserve life, property, and evidence.

   a. Take necessary precautions to avoid additional injury and damage
   b. Administer first aid to victims

2. Look around for witnesses.

   a. Record license number of vehicles parked nearby for possible witnesses.

3. Look for physical evidence.

   a. Guard it for collection, examination or photographing.

4. Locate the driver(s) of both vehicles.

   a. Get names and addresses.
   b. Check state operators permits.

C. Get short-lived evidence

1. Locate evidence

   a. which will be lost or altered when traffic resumes its normal pattern
   b. which will be altered when clearance activities begin

c. that weather will cause to deteriorate
d. that you have little control over.

2. Mark and measure

a. debris in traffic lane
b. skid marks
c. bodies
d. marks of significance on earth or shoulder of road
e. point of impact

3. Photograph the scene

a. Photos preserve the scene exactly as it is
b. May be used to relocate evidence which rapidly deteriorates or is altered prior to collection

4. Collect samples of significant fluids on roadway

D. Gather long-lived data

1. Data which will not change until you permit it to
2. Data which will not change at all
3. Complete statements from information sources secured in the previous phase
4. Gather and preserve evidence of the following:

a. Accident scene photography—complete photos
b. Interview witness at length
c. Driver

(1) Pre-crash conditions
(2) Natural abilities
(3) Learned capabilities
(4) Personality and attitude
(5) Distractions at scene
(6) Physical, emotional condition

(a) Intoxication
(b) Illness-physical/mental

(7) Statements as to causes
(8) Condition, injuries following accident
(9) Sources of injury

d. Vehicle

(1) Pre-crash damage and defects

(a) Contributory
(b) Non-contributory

(2) Resolve contentions about condition of vehicle before and after accident
(3) Crash damage

(a) Contact
(b) Induced

(c) Position and angle of infliction of damage
(d) Cause of specific damage in multi-impact accidents
(e) Match vehicle parts to marks on road

e. Environment

(1) Description of roadway
(2) Weather conditions and effect on surface roadway
(3) Location of debris
(4) Evaluation of debris
(5) Preservation of debris
(6) Marks on roadway caused by vehicles
(7) Area of impact
(8) Route of travel before and after impact
(9) Relocation measurements
(10) Field sketch
(11) Make speed estimates
(12) Hazards on approaches which may be causitive

E. Analyze and react

1. Analyze and report phase

a. Compilation
b. Analyzation
c. Review
d. Conclude
e. Advise
f. Report phase

2. Purpose of analyzing and reporting

a. Compile: Get all information in one place.
b. Analyze: What does the information say; what is missing?
c. Review: What additional information should we have?
d. Conclusion: What caused the accident so we can advise?
e. Advise: Written recommendations to other agencies (department of highways, street departments, signals, courts, manufacturers) about what should be done to prevent accidents.
f. Report: Final written report for agency.

(1) Facts
(2) Cause
(3) Conclusions
(4) Advise
(5) Ready for trial or other public use

F. Follow-up

1. Return to the scene if necessary

a. Retake photos of locale
b. Remeasure scene for scale drawing to be used in court

2. Complete report of accident

a. Have copies made

3. Request expert assistance when needed

   a. Furnish expert with accident report

4. Reconstruct the accident scene

   (a) Estimate speeds
   (b) Draw scale diagram
   (c) Analyze angle of collision
   (d) Summarize and form an opinion
   (e) File final report and distribute

APPLICATION:

1. Ask students to write a paragraph on "Why Plan for Investigation?" Evaluate and return.

2. Given a mock (simulated) situation have the students to plan the procedure for investigating the accident. This can be prepared in writing.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 4

UNIT: Identify

LESSON PLAN TOPIC: Definitions and Classifications

OBJECTIVES: The student will be able to:

1. Demonstrate the proper usage of legal and investigative terminology to accurately describe factors and events in motor vehicle accidents

2. Demonstrate familiarization with the classification of motor vehicle accidents.

PREPARATION OF THE LEARNER:

The basic purpose for dispatching an investigator to the scene of an accident is that he will collect and record facts as to how and why an accident occured.

Accurate collection of facts is the investigator's important contribution toward providing a uniform basis for compiling general purpose statistics. As a result of your contribution a means is provided to help measure the magnitude of the traffic accident problems and delineate certain problem areas.

To the prospective accident investigator, the study of motor vehicle traffic accidents is no different than the study of any other subject matter. In order to understand and communicate intelligently with other investigators, one must have a firm foundation or background in the uniform (legal and investigative) terminology which is unique to motor vehicle accidents, their causes, and classifications.

Note: This lesson can be supplemented with the use of *Manual on Classification of Motor Vehicle Traffic Accidents.*

PRESENTATION:

I. Terminology for accident investigation:

A. Terms and definitions

1. Instruct in use of the *Manual on Classification of Motor Vehicle Traffic Accidents.*

2. Identify essential terms (55,6)

a. Traffic Accident
b. Trafficway
c. Roadway
d. Road
e. Shoulder
f. Motor Vehicle
g. Pedestrian Conveyance
h. Other Road Vehicle
i. Railway Train or Railway Vehicle
j. Motorcycle
k. Pedalcycle
l. Pedestrian
m. Driver
n. In Transport

o. Accident
p. Transport Accident
q. Motor Vehicle Accident
r. Other Road Vehicle Accident
s. Motor Vehicle
t. Motor Vehicle Nontraffic Accident
u. Other Road Vehicle Traffic Accident
v. Other Road Vehicle Nontraffic Accident
w. Fatal Accident
x. Nonfatal Injury Accident
y. Property Damage Accident
z. Chain Reaction Accident
aa. Intersection
bb. Driveway Access
cc. Gore
dd. Ramp Terminal
ee. At-Grade Intersection
ff. Unchannelized At-Grade Intersection
gg. Channelized Intersection
hh. Grade Separation
ii. Interchange
jj. Frontage Road
kk. Curb Return
ll. Crosswalk
mm. Encroachment
nn. Evasive Action
oo. Initial Contact
pp. Maximum Engagement
qq. Disengagement
rr. Key Event
ss. Perception of Hazard
tt. Attributes
uu. Modifiers

II. Classification of traffic accidents (55)
Instructor's Note: Use categories according to the American National Standard D 16.1-1970.

A. Eleven classification categories

1. Injury to person
2. Damage to vehicle
3. Injury severity of accident
4. Damage severity
5. Number of motor vehicles involved
6. First harmful event
7. Roadway-related location
8. Junction-related location
9. Class of trafficway
10. Land use character
11. Political subdivision

B. Classification of injury to person and severity of accident

1. Applies to any person involved while either in or out of a motor vheicle. The entire accident is categorized according to the most serious injury substained by any person involved.

2. Five categories:

   a. Fatal injury
   b. Incapacitating injury
   c. Nonincapacitating evident injury
   d. Possible injury
   e. No injury

3. Description:

   a. **Fatal injury** is any injury that results in death within twelve months of the motor vehicle traffic accident.
   b. **Incapacitating injury** is any injury, other than fatal, which prevents the injured person from walking, driving, or normally continuing the activities which he was capable of performing prior to the motor vehicle accident.
   c. **Nonincapacitating evident injury** is any injury, other than fatal and incapacitating, which is evident to any observer at the scene of the accident.
   d. **Possible injury** is an injury which is claimed or reported, or indicated by behavior, but not by wounds.
   e. **No injury** is a situation in which there is no reason to believe that the person received any bodily harm from the accident.

C. Classification of damage to vehicle

1. Applies to any motor vehicle involved and also to property other than motor vehicles. The entire accident is classified according to the most serious damage sustained by any motor vehicle involved.

2. Categories of damage to vehicle:

   a. Disabling damage
   b. Functional damage
   c. Other motor vehicle damage
   d. Other property damage
   e. No damage

3. Description:

   a. **Disabling damage** is any damage to a motor vehicle such that it cannot be driven or, in the case of trailers, towed from the scene of the accident in the usual manner by daylight after simple repairs.
   b. **Functional damage** is any nondisabling damage to a motor vehicle which affects operation of the motor vehicle or its parts.
   c. **Other motor vehicle** damage is any damage to a motor vehicle which is neither disabling nor functional damage. Such damage usually affects only the load on the motor vehicle or the appearance of the motor vehicle.
   d. **Other property damage** is damage to property other than motor vehicles, if there is no damage to a motor vehicle in the accident.
   e. **No damage** is a situation in which there is an absence of any observed or reported damage in connection with the accident.

D. Classification of number of motor vehicles involved

1. Is the number of motor vehicles in transport which are damaged, which damage other property,

in which an occupant is injured, or which injures any person in a motor vehicle traffic accident before the accident reaches a stabilized situation.

E. Classification of first harmful event

1. The purpose of this classification is to describe what it was that first did damage or injury in the series of events that constitute a motor vehicle traffic accident.
2. This classification is only for motor vehicle traffic accidents.
3. Every motor vehicle accident may be put in one of eleven categories of this classification but only one.

   a. Overturning
   b. Other non-collision
   c. Collision with pedestrian
   d. Collision with motor vehicle in transport
   e. Collision with motor vehicle on other roadway
   f. Collision with parked motor vehicle
   g. Collision with railway train
   h. Collision with pedalcycle
   i. Collision with animal
   j. Collision with fixed object
   k. Collision with other object

4. Description:

   a. **Noncollision accident** is any accident involving a motor vehicle in transport, which may occur in any manner other than by collision. There are two types of noncollision accidents: overturning and other noncollision accidents.

      (1) Overturning accident is any accident in which a motor vehicle in transport overturns for any reason without an antecedent accident.
      (2) Other noncollision accident is any accident involving a motor vehicle in transport other than overturning and collision.

   b. **Collision accident** is any accident involving a motor vehicle in transport, in which the motor vehicle, its load, its parts, or objects set in motion by the motor vehicle, collide with other things such as other motor vehicles, railway trains, other road vehicles, pedestrians, animals, or objects fixed, movable or moving. Types of collision accidents include:

      (1) Collision involving pedestrians is any accident involving a motor vehicle in transport and a pedestrian.
      (2) Collision involving motor vehicle in transport is any accident involving at least two motor vehicles in transport upon the same roadway or upon roadways within an intersection.
      (3) Collision involving motor vehicle on other roadway is any accident in which a motor vehicle in transport leaves the roadway on which it is in transport and collides with another motor vehicle in transport on another roadway.
      (4) Collision involving parked motor vehicle is any accident involving a motor vehicle in transport and a motor vehicle not in transport.
      (5) Collision involving railway train is any accident involving a motor vehicle in transport and a railway train or railway vehicle.
      (6) Collision involving pedalcyclist is any accident involving a motor vehicle in transport and a pedalcyclist in transport.
      (7) Collision involving animal is any accident involving a motor vehicle in transport and an animal, herded or unattended.

(8) Collision involving fixed object is any accident involving a motor vehicle in transport and a fixed object.
(9) Collision involving other object is any accident involving a motor vehicle in transport and any other object which is movable or moving but not fixed.

F. Classification of roadway-related location

1. The purpose of this classification is to describe where on the trafficway the accident occurred, especially with respect to the roadway.
2. Location of the accident is the point at which the first event doing damage or injury (first impact) occurs.

   a. On roadway
   b. Off roadway

G. Classification of junction-related location

1. The purpose of this classification is to describe where on the trafficway the accident occurred especially with respect to intersections and junctions.
2. Four categories:

   a. Intersection accident
   b. Intersection related
   c. Driveway access accident
   d. Nonjunction accident

3. Description:

   a. At intersection accident is any motor vehicle traffic accident in which the initial impact occurs within the limit of an intersection.
   b. Intersection related accident is any motor vehicle traffic accident that occurs on the approach to or exit from an intersection which results from an activity, behavior, or control affecting motor vehicle movement through the intersection which, in turn, affects motor vehicles on the approach to or exit from the intersection.
   c. Driveway access accident is a motor vehicle accident that is turning into or out of a driveway access, or is crossing a trafficway from a driveway access onto one side to a driveway access on the other side.
   d. Nonjunction accident is a motor vehicle accident that is not an intersection accident, intersection-related accident or a driveway access accident.

H. Classification of class of trafficway:

1. Class of trafficway is an order of precedence by which motor vehicle traffic accidents may be categorized and assigned to the trafficway location classification.
2. Such accidents are assigned to the highest class or category to which the trafficway or trafficways on which they occur can be attributed.
3. Eight categories:

   a. Interstate system
   b. Other fully controlled access road
   c. Other U.S. numbered route
   d. Other state numbered route
   e. Other major arterial
   f. County road

g. Local Street
h. Other road

4. Description:

a. Interstate system is any trafficway within the national system for interstate and defense trafficways.
b. Other fully controlled access is any trafficway, such as a freeway, expressway, or parkway with full control of access which may or may not be within the U.S. or state route numbered trafficway system but not in the interstate system.
c. Other U.S. route numbered is any trafficway within the U.S. trafficway system excluding interstate and other limited access trafficways.
d. Other state route numbered is any trafficway within the state trafficway system excluding other limited access trafficways.
e. Other major arterial is any trafficway usually city streets and county trafficway system that does not fall within the interstate, other limited access, U.S. route numbered, state route numbered, or other major arterial system.
f. County road is any trafficway within a county trafficway system that does not fall within the interstate, other limited access, U.S. route numbered, state route numbered, or other major arterial system.
g. Local street is any trafficway within a city trafficway system that does not fall within the interstate, other limited access, U.S. route numbered, state route numbered, or other major arterial system.
h. All other trafficways are trafficways which do not meet the specifications for the trafficways of higher precedence such as alleys and private roads open to the public for purposes of vehicular travel.

I. Classification of land use character

1. The purpose of this classification is to describe the general area in which a motor vehicle accident occured.

1. Two categories:

a. Urban area
b. Rural area

2. Description:

a. Urban area is an area including and adjacent to a municipality or other known place of 5,000 or more population as shown on the latest federal census, the boundaries of which are fixed by state highway departments.
b. Rural area is any area that is not an urban area.

J. Classification of political subdivision

1. The political subdivision provides categories based on geographical limits, usually the political limits of the locality to which all motor vehicle traffic accidents occurring within the limits will be assigned.
2. Three categories:

a. State
b. County
c. City

APPLICATION:

1. Using hypothesized situations, supply the student with a series of instructor prepared accident diagrams and descriptions and require the students to classify them according to the accepted standard using correct terminology.

2. Student should demonstrate working knowledge of his ability to properly classify accidents by preparing classification exercises as illustrated in: Training Manual No. 2 "Exercises in Classifying Motor Vehicle Trafficway Accidents." (Refer to activity in Student Guide.)

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Baker, J. Stannard, and Stebbins, William R., Jr. *Dictionary of Highway Traffic.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1960.

3. "Instructor's Guide for Traffic Accident Investigation" (Based on the Traffic Accident Investigator's Manual for Police). Evanston, Illinois: The Traffic Institute, Northwestern University, 1957.

4. Traffic Accident Data Project. "Exercises in Classifying Motor Vehicle Trafficway Accidents." Chicago, Illinois: The National Safety Council.

5. _____. "Guide to Classification of Motor Vehicle Trafficway Accidents." Chicago, Illinois: The National Safety Council.

6. _____. "Instructor's Kit for Classifying Motor Vehicle Trafficway Accidents." Chicago, Illinois: The National Safety Council.

7. _____. "Manual on Classification of Motor Vehicle Traffic Accidents." Chicago, Illinois: The National Safety Council, 1970.

8. U.V.C. *Uniform Vehicle Code.* Washington, D.C.: National Committee on Uniform Traffic Laws and Ordinances.

LESSON PLAN 5

UNIT: Identify

LESSON PLAN TOPIC: Identify the Driver

OBJECTIVES: The student will be able to:

1. Identify all relevant terms with corresponding definitions as they apply to the identification of the driver
2. Identify driver's responsibility in relation to civil and criminal obligations
3. Analyze and differentiate between the DO'S and DON'TS of identifying and alerting involved drivers
4. Itemize reasons why time is of the essence in identifying the drivers
5. Orally specify reasons why a driver(s) will many times flee from the accident scene.

PREPARATION OF THE LEARNER:

Using personal experience in accident investigation, relate to the students several instances illustrating the importance of locating and identifying drivers. Stress that the procedures for investigating a hit and run (skip) accident are primarily police functions and not the perrogatives of the accident investigation technician.

PRESENTATION:

I. Relevant terms and corresponding definitions
Note: To insure a degree of uniformity of understanding the following terms are used in this lesson. Refer to the unit on definitions and classification of terms for supplemental information.

A. Motor vehicle traffic accident: (55)

1. An event occurring on a trafficway involving one motor vehicle and another unit.

B. Involved driver: (6,59)

1. The driver of a vehicle which, by its movement, is part of a chain of events leading to a motor vehicle traffic accident regardless of "fault," contact, or lack of contact between vehicles.

C. Hit and run: (6)

1. Flight from an accident scene, by a driver, in an attempt to avoid association with that accident, for personal reasons.
2. Basically, hit and run, established to a large extent through specific driver "intent," is simply a form of evading responsibility after involvement as a driver in a motor vehicle accident. (Refer to applicable local or state statute regarding hit and run.)

II. Driver responsibilities:

A. The civil and criminal obligations of a driver involved in an accident are clearly spelled out, however, they will differ slightly from state to state and city to city.

B. Responsibility of the driver covers: (6, 39, 55)

1. Stopping of his vehicle in, at, or as near to the accident scene as is safe and practical
2. Rendering or assisting in rendering first-aid or some other physical assistance, as may be needed
3. Providing all necessary personal information, as specified by law.

III. Do's and don'ts of identifying and alerting accident scene drivers:

A. *Do's*

Note to Instructor: Distinguish between what is a law enforcement function and what is a technician function.

1. Realize that time is generally of the essence.
2. Realize that locating the drivers in a hit and run (skip) case is usually the most difficult part of the investigation.
3. Begin your search for all drivers (and additional vehicle occupants) as soon as possible.

   a. Normally, this is possible once the accident scene has been physically protected from worsening effects and the injured have been cared for.

4. If drivers do not come forward and identify themselves or if you do not locate them upon arrival, address yourself to onlookers individually, to ascertain who was driving.
5. During the earliest stages of these inquiries, ascertain if the occurrence is legitimately a "hit and run (skip)."
6. Keep in mind that drivers, even "hit and run (skip)" drivers, have been known to return to the accident scene, well before the investigation at the scene is concluded.
7. Be certain to also question obvious non-drivers of the accident for valid information about the driver.
8. Maintain communications between the enforcement officers at the crash scene and headquarters.
9. Be absolutely certain that any dialogue between yourself and any or all of those assembled at the scene is clear, concise, and complete. (Give examples of misunderstandings and consequences.)
10. If to your advantage and feasible, enlist the services of one or more apparently responsible onlookers to assist in accomplishing your objectives:

    a. Great care must be exercised in the hurried selection of onlookers unless familiar faces are seen such as:

       (1) Friends
       (2) Reserve officers
       (3) Military personnel

          (a) Shore patrol
          (b) Air police
          (c) Military police

       (4) Drivers or driver's friends

    b. Always obtain personal information about those offering or consenting to assist in some way at the scene.

B. Don'ts

1. Don't use the term "witness" when at the crash scene.
2. Don't be so hurried in your eagerness to identify drivers, properly classify the accident and otherwise accomplish objectives, that you sacrifice quality of work.
3. Don't fail to seek the identity of onlookers who walk away from the scene until you've at least asked their relationship to the accident.

   a. Example:
      The hit and run driver may be among those leaving the scene and evades initial identification as part of a group.

4. Don't fail to pay particular attention to mannerisms and dress of the onlookers.

   a. Example:
      1. At 3:30 a.m. all but two of the onlookers are dressed in bedclothes, the two dressed in suits could be the drivers.
      2. The one onlooker apparently under the influence of intoxicating liquor could be the missing driver.

5. Don't neglect normal investigative steps of routine traffic accident based upon assumption that you have a legitimate "hit and run (skip)."

IV. Essence of time in identifying the driver(s)

A. Unnecessary delays of time will cause or permit the following:

1. Uncertainty in recalling facts
2. Facts to be tainted by comments from other parties
3. Establishment and practice of alibis
4. Departure from scene of accident to residence or other location, until it is felt safe to move around
5. Sobering up or elimination of any tell-tale traces of alcohol, drugs, or narcotics
6. Repossession of driver's license, vehicle registration, or corrective glasses, not in possession at time of accident
7. Sale of vehicle
8. Trade-in of vehicle
9. Return to rightful owner, if vehicle was stolen
10. Abandonment

V. Reasons why a driver may flee from the accident scene

Note: Due to the "degrees" of hit and run, e.g., felony or misdemeanor classification, what motivates a driver to flee from the accident scene may depend to some extent on whether or not he is aware of immediate accident results with respect to property damage and/or personal injury. State laws vary.

A. Fear

B. Embarrassment

C. Anger

D. Premeditated or intentional involvement

E. Overt attempt to avoid criminal and civil liability

F. Involuntary absence from scene

G. Stolen motor vehicle

H. Emergency situation

1. Rushing to hospital

APPLICATION:

1. Using pairs or small groups of students, assign the writing of mock simulation situations to reflect the following:

   a. The do's and don'ts of locating and identifying accident scene drivers
   b. Situations showing five reasons why time is important in identifying drivers
   c. Situations depicting reasons why a driver will flee from the accident scene

   Each group of students will role play their simulated situation before the class. Students in the class should be assigned roles to play and class discussion should illustrate the prominent points in the lesson unit. It is suggested that these simulated situations occur outside of the classroom when possible.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Brittenham, J. G.; Glancy, D. M.; and Karrer, E.H. "A Method of Investigating Highway Traffic Accidents." Highway Research Board, Bulletin 161, 1957.

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4. Cromack, J. Robert. "Multi-Disciplinary Accident Investigation." Final Report, Contract FH-11-7219. Washington, D.C.: U.S. Department of Transportation, August 1, 1970.

5. McFarland, Ross A. "Measurements of Human Factors in Accident Research." *Traffic Digest and Review*. Evanston, Illinois: Northwestern University, June, 1966.

6. O'Hara, Charles E. *Fundamentals of Criminal Investigation*. Springfield, Illinois: Charles C. Thomas, 1970.

7. Salottolo, A. Lawrence. *Modern Police Service Encyclopedia*. New York: Arco Publishing Company, 1970.

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LESSON PLAN 6

UNIT: Identify

LESSON PLAN TOPIC: Examine for Pre-crash Conditions of the Driver with Reference to Alcohol, Drugs and for Sobriety

OBJECTIVES: The student will be able to:

1. Identify symptoms or characteristics of the alcohol and/or drug influenced person.
2. Demonstrate the performance tests as shown on the alcohol or drug report form to determine physical abilities.

PREPARATION OF THE LEARNER:

With some 55,000 deaths each year on the nation's highways and about half of those caused by alcohol, how can the investigator at the accident scene become more adept at identifying the impaired driver?

Describe each:

1. What role does alcohol play in our locality?
2. What role do drugs play?
3. What can be done to assist the investigator in detecting the person who is under the influence?

This presentation is designed to assist the investigator in determining if a person is "under the influence" at the accident site. It does not cover the area of obtaining chemical tests.

(Note: With the varied backgrounds of the students who may be receiving this instruction it is imperative that the instructor initially motivate his students to want to learn how to detect and test the drinking subject. A number of different ways could be used in the introduction of this subject as traffic fatalities, role playing, questioning of students to see what they now know about the effects of alcohol, statistical data on percentage of crash victims with high blood alcohol content reading, etc.)

PRESENTATION:

I. Elements of offense of driving under the influence of alcohol/drugs

A. There are *generally* five elements of the offense of driving under the influence. (Refer to local statutes.)

1. A person
2. Under the influence (alcohol or drugs)
3. Drive or be in actual physical control
4. Of a vehicle
5. Within the state

II. Suspecting drugs or alcohol influence

A. Reason to believe that an individual's mental or physical abilities are affected.

B. Obvious the individual's behavior is out of context with the surroundings.

C. Individual appears to be under the influence and either does or does not have the characteristic odor of alcohol.

D. Individual is obviously impaired but denies anything is wrong.

III. Symptoms of alcoholic influence

A. Odor of alcoholic beverages on the breath

B. Swaying or unsteadiness—staggering

C. Poor muscular coordination

D. Confusion

E. Sleepiness

F. Disorderly appearance

G. Speech impairment, such as slurred, confused, thick tongue

H. Dizziness

I. Nausea

J. Unusual actions, such as very talkative

K. Visual disorders—fixed stare - glassy eyes

L. Flushed skin

IV. Basic tests of coordination: (Note: The coordination tests are used to ascertain the extent to which a driver's physical reactions have been impaired. Conclusions regarding the degree of influence are based on the driver's response to questions, his ability to follow instructions and his reactions to the tests. Always demonstrate to the suspect how the test is to be performed. If possible, have other persons witness and observe the coordination tests. The manner which the suspect received the instructions and the manner in which he carried them out should be noted and recorded. Your conclusions should be based on the suspect's actions, reactions, conversation, performance, and overall condition. In other words, everything that relates to his condition.)

A. Balance test

1. Describe and demonstrate:

a. In this test, the suspect should be directed to stand erect with his heels together and toes touching, pointing straight ahead, with his head back and his eyes closed. The arms can either remain at the side or held at shoulder height; however, the position of the arms should be noted. While most people will sway somewhat during this test, the intoxicated person will tend to sway and recover with jerky movements, presuming that he is able to do the test at all. These facts should be noted. In addition to the above test, a variation can be done against the toe of the other (as in the heel to toe walking test). Again, the reactions should be noted.

B. Finger to nose test

1. Describe and demonstrate:

a. In this test, the suspect should stand erect, feet in the same position as with the balance test, eyes closed and arms extended horizontally to the sides. The subject should be told to touch the tip of the nose with a designated finger on either the right or left hand. Rather than do the right and then the left, it is best to give the subject a series of rights and lefts. It should be noted on the form where the finger touched the face or nose as well as merely describing the action by circling a word.

C. Walking and turning test

1. Describe and demonstrate:

a. The suspect should be asked to walk a straight line (or an imaginary line between two points) with the heel of one foot placed against the toe of the other. There are several ways to have the individual perform from here on. Any one or a combination of the tests will be adequate. Ask the individual to walk about 20 feet, stop and turn quickly and return; or walk as many steps as the subject wants then stop and turn quickly and return. Particular attention should be made to the ability to understand, the ability to stay on the line while walking and the ability to turn quickly and return on the same line walking heel to toe.

D. Coin test

1. Describe and demonstrate:

a. The suspect should be asked to pick up a number of coins placed on the floor. This test, as are the others, is to determine overall ability to follow instructions and also coordination. The suspect should be instructed to walk to where the coins are placed and then pick up all heads, all tails or any conbination as instructed. Particular notations should be made of falling, aiding balance by placing the hand on the floor, or other such actions. This test can be indicative of the amphetamine user, as very often this person will have distorted depth and size perception.

By asking the person to pick up the largest, or next to largest or smallest coin (in size), you can test the ability to discriminate both size and depth. An additional test for depth and size can be done by placing two small blocks of wood or any two objects of equal size on the top of a patrol car and then asking the person to tell you which is largest and also which is closest.

V. A layman's physical examination

(Note: Certain characteristics of the human body can be very easily checked to see if there is a variance from the "norm.")

A. Layman's tests:

1. Checking of eyes

a. Observe the size of a person's pupils either by covering with the hand or if at night, by shining a light into the eye of the suspect and comparing the reaction to some other person.

2. The handshake

a. With many drugs, a fine tremor will be caused in the hands of the user and it can be easily detected by the handshake.

3. Checking of pulse rate

   a. As with the tremors in the hand the pulse rate is very often greatly increased by the use of drugs. With many drug users they complain of terrific pounding of the heart and headaches.

4. Observing dryness of the mouth and lips

   a. Amphetamines often cause extreme dryness of both the mouth and lips.
   b. The lips may appear chapped.

VI. Portable breath testing device

A. Demonstrate the use of the portable breath testing device.
(Note: Refer to the *Basic Training Program for Breath Examiner Specialist*. See reference.)

APPLICATION:

1. The student will have a fellow student perform a series of coordination tests in the same manner as in the actual field situation. As the tests are conducted the student will be able to describe what specific things to look for that will indicate deterioration of ability.

2. The student will administer a physical coordination test on an actual drinking subject in which he will describe how to do the test and what things to look for.

3. When possible have a portable breath testing device available for both demonstration and to maintain a constant level of blood alcohol and to illustrate the amount of deterioration with the blood alcohol content.

   a. Select students to conduct the drinking subjects in the performance tests as shown on the alcoholic influence report form.
   b. Have students complete the alcohilic influence report form as the tests are being conducted.
   c. After the student has conducted the performance tests the instructor should then correct any mistakes made and then should guide the drinking subject through the tests again.
   d. Select additional students to conduct the tests.
   e. After the testing is complete, recap what was seen and done in the classroom and equate these things to the actual driving situation.

Note: CAUTIONS:
   a. Find out the legality of having student trainees consume alcohol within the classroom setting if this technique is used.
   b. Keep blood alcohol levels below .10%.
   c. Once the drinking subjects have started be careful to hold them in careful control.

SUGGESTED REFERENCES:

1. *Alcohol and the Impared Driver*. Chicago, Illinois: American Medical Association, 1968.

2. Donigan, R. L. *Chemical Tests and the Law*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1961.

3. *Drug Use and Highway Safety: A Review of Literature*. Stemens Point, Wisconsin: University of Wisconsin, DOT HS-800-580.

4. Dunlap and Associates, Inc. *Basic Training Program for Breath Examiner Specialist* (3 manuals). DOT CONTRACT FH-11-7540, Washington, D. C.: U. S. Government Printing Office, 1971.

5. Fisher, E. C. *Vehicle Traffic Laws*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1961.

6. *The Way to Go*. Chicago, Illinois: Kemper Insurance Company.

7. *What About Drugs and Employees*. Chicago, Illinois: Kemper Insurance Company.

LESSON PLAN 7

UNIT: Identify

LESSON PLAN TOPIC: Examine for Pre-crash and Post-crash Conditions of the Driver with Reference to Emotion, Fatigue, and Physical Illness

OBJECTIVES: The student will:

1. Identify evidence at accident scene which indicates causation from emotion, fatigue, and physical illness.

2. Identify driver condition causing the driver to perform incorrectly or to fail to perform correctly.

PREPARATION OF THE LEARNER:

Long-range, in-depth studies of accident causation clearly indicate that driver condition prior to accidents makes a heavy contribution to the cause of accidents. The on-site accident investigator is not qualified to make a sophisticated diagnosis of mental and physical illness, but as an expert "gatherer of facts" he is in a good position to observe and inquire as to the facts about driver condition. The information may prove valuable in several ways: (1) prosecution for driver condition is not always warranted but the facts may be used as circumstantial evidence to establish other law violations; (2) information thus gathered may indicate that a special examination by the licensing agency is warranted; (3) a compilation of information may be used for public information and education; (4) the information may be used when considering proposed legislation; (5) the information may be used when considering licensing and enforcement policies.

PRESENTATION:

Note to Instructor: Use class discussion with questions and outline. Suggest use of instructor-prepared transparencies to augment the following information.

I. Emotional problems that may contribute to the accident

A. Identify emotional problems

1. Anger
2. Grief
3. Elation
4. Depression (self-destruction)
5. Exhibition
6. Mental illness
7. Jealousy

B. Questions to ask and factors to consider for identifying emotional problems

1. Review statements to drivers, passengers, and witnesses.
2. Where was the driver going?
3. Where was the driver coming from?
4. What was the purpose of the trip?
5. What actions occurred just prior to the accident?
6. What is the apparent intelligence of the driver?
7. What personality traits are evident?
8. What is the age of the driver?
9. Determine if the accident caused the emotions.

II. Questions to ask and factors to consider for identifying fatigue

A. Where did the trip begin?

B. Where were you going?

C. When did you last sleep?

D. How long did you sleep?

E. How long since your last stop?

F. What is the purpose of the trip?

G. What is the driver's opinion of his fatigue?

H. What recent strenuous activities did you perform?

I. What witness and passenger information should you obtain to confirm or disprove driver's answers?

III. Questions to ask and factors to consider for identifying physical illness

A. What is the purpose of the trip?

B. Are you taking medication?

C. What appearance does the driver have?

D. Is there an apparent illness?

E. What are the reflexes?

F. What is the visual acuity?

G. What other person's statements (passengers, physician, relative) do you obtain?

IV. Utilization of information regarding emotion, fatigue, and physical illness

A. Record in notes

B. Circumstantial evidence

C. May want to refer to driver's license division

D. Agency or employer's report requirements

APPLICATION:

1. The questions suggested in Application 2, should be answered in reference to these or other fact situations: (each group will select one)

(Continued on next page)

APPLICATION: (Continued)

a. A young lady is found by motorists along the road at night, confused and shaken up. You find her car in the middle of a large field. Physical evidence shows the vehicle left the roadway, crashed through the fence and over an irrigation ditch. There is no sign of evasive action. The driver claims no knowledge of what happened.
b. It is a bright sunny day with heavy traffic. Two vehicles driven by two young men lock bumpers (right rear to left front) on a four lane road. They both lose control and leave the roadway. One driver says he misjudged his passing clearance.
c. Around 6 a.m. in July, a vehicle collides with the rear of another as they both were traveling east on a long stretch of interstate highway. Neither driver is hurt. There is no evidence of evasive action. The driver of the rear vehicle states that he was in the act of fastening his seat belt when the accident occurred.

2. Divide class into small groups and ask them to list probable answers to the following questions using a role-play situation of fact situations.

a. What was the driver's condition? (emotion, fatigue, or physical illness)
b. Explain how you think it contributed to the cause of the accident.
c. List some questions you would ask or factors you may want to consider to verify your suspicions.
d. How might you, as the investigator, utilize what information you may have obtained?

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 8

UNIT: Identify

LESSON PLAN TOPIC: Identify Behaviors in Driver Personality and Attitude

OBJECTIVES: The student will be able to:

1. Identify attitudes as they relate to the driver's behavior.

2. Identify the various factors which affect attitudes as they relate to driver behavior.

3. Relate how the driver's attitude can effect the investigator's behavior.

PREPARATION OF THE LEARNER:

The personality and attitudinal traits of an individual are refected in the manner in which he operates a motor vehicle. Attitude is just one facet of the total personality. Together with natural abilities and learned behavior the driver's attitude can provide a great insight into his personality and in turn into his performance behind the wheel. (6)

A person drives as he lives. As an accident investigator it is incumbent upon you to comprehend the impact of personality and attitude on driver behavior. There are a few criminal statutes which cover "carelessness" which is a good example of a common contributory attitude. Reckless driving laws contain the provision that a wanton disregard for safety as a want of attention to the nature and probable consequences of an act as a man of ordinary care and prudence would practice.

Recklessness, carelessness, and negligence involve attitudinal possibilities which must be determined by an investigator seeking to find the cause or causes of an accident.

PRESENTATION:

I. Class discussion: How would you as an investigator begin to determine and evaluate a driver's personality and attitude?

A. Define personality

B. Define attitude

C. Show how the following driver behaviors could indicate certain driver attitudes:

1. Speeding
2. Following too close
3. Cutting in and out
4. Driving on shoulder and wrong side of road
5. Drag racing and speed contests

II. Things which could have an effect on the driver's personality and attitude—temporary and more or less permanent.
Note: Instructor should develop this list or use resource persons such as psychologists

A. Maturity

B. Stability

C. Age

III. Effect of driver's attitude upon the performance of the investigator

A. Generalization about clothing, hair styles, and type of vehicle

B. Condition or restyling of vehicle

C. Erratical driving

D. Aggressive behavior

E. Others

APPLICATION:

1. Using the technique of role playing, assign pairs of students one of the following situations to act out showing the driver's attitude and how it affects his performance as the driver. Also stress how the driver's attitude may affect the investigator's performance.

   a. Some suggested situations are:

      (1) Witnesses tell the investigator that about half a minute before the accident the two cars were lined up alongside each other and the drivers were talking.
      (2) A vehicle containing two teen-aged couples has slid off a curve apparently at a high rate of speed. How would you assess the part that the driver's attitude may have had?
      (3) A vehicle driven by a "hippie" type has struck a vehicle driven by a middle-aged stock broker. What are the attitudinal possibilities of each party and of the investigator?
      (4) A vehicle driven by a young man crosses the center line and collides with another vehicle. Just before the impact, a vehicle driven by a beautiful young woman was on his right.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 9

UNIT: Identify

LESSON PLAN TOPIC: Identify Natural Abilities of the Driver

OBJECTIVES: The students will be able to:

1. Identify the conditional characteristics of an individual's natural abilities, such as vision, hearing, reaction, physical control, and obvious mental and emotional characteristics as they relate to accident investigation
2. Perform roadside tests to determine natural abilities as potential accident causes
3. Identify driver distractions and reactions as possible accident causes.

PREPARATION OF THE LEARNER:

We are interested primarily in prior conditions as possible factors. You can observe many driver conditions after the accident, but you must ordinarily use methods other than observation to determine what his condition was immediately before the accident. It is important to determine if the driver's condition contributed to the accident or the accident contributed to the driver's condition.

PRESENTATION:

Instructor's Note: Content should be developed by class discussion with the appropriate visual aids.

I. Common physical aspects of the individual an investigator should look for. (6)

A. Vision

1. Visual activity and suggested tested situations

a. Have person read a car license number 100 feet away—in daylight and at night.
b. Have person read the road sign that was involved in accident—in daylight and at night.

2. Night blindness and suggested testing situations

a. Check for dark clothing 200 feet away with dark background.
b. Can subject distinguish standing or sitting?

3. Glare blindness and suggested testing situations

a. Stand man in front of car, turn headlights on.
b. Can he see man in dark clothes next to car?

4. Depth perception and suggested testing situation

a. The ability to judge distance.
b. Using an instructor-determined scale, have students judge distances while driving on a specified course.

5. Color blindness and suggested testing situation

a. The inability to distinguish certain colors of red and green shades.
b. Have each student test another student using the appropriate color charts to be supplied by the instructor.

B. Hearing

1. Drop a heavy or light object.
2. Blow horn or whistle.

C. Condition of mind and nerves

1. Lower intelligence lacking understanding of hazardous conditions
2. Poor judgment of the situation

D. Physical deficiencies and disabilities

1. Stiff and painful joints
2. Extreme overweight
3. Amputees
4. Physical strength lacking

II. Need for identifying factors as possible determination of accident cause.

III. Driver reaction time (6)

A. Definition: The time that it takes a driver to perceive a driving situation and for the muscles to respond.

B. Importance of driver reaction: Every driving situation either dangerous or nondangerous requires a driver reaction.

C. Inability to solve problems of:

1. Road conditions
2. Vehicle conditions
3. Traffic conditions

D. Delayed reactions: Driver may fail to react promptly due to distraction.

1. What is a distraction?

a. Examples:
Anything that attracts attention, turns or diverts the mind or thought process. May be something heard, or seen, or thought about (daydreaming).

2. What minor emergencies sometimes cause driver distraction?

a. Examples:
A bee in the car, large fly, a dropped match, lighted cigarette, spark from cigare[illegible] rock hitting a window or windshield can easily cause driver diversion resulting in collision or loss of control.

3. What internal distractions cause driver error or omissions and contribute to accidents?

a. Examples:
Passenger demands, children's noises, pets and motor noises

4. What outside distractions would cause driver interest diversion?

a. Examples:
Wildlife, scenic views, advertisements, accidents on the highway, vintage cars, fancy model cars, road construction

5. What driver activities are distractors which cause many accidents?

a. Examples:
Lighting cigarette, cigar, or pipe, reading map, arranging materials while driving, eating while driving, opening or closing windows on opposite side

APPLICATION:

1. The instructor will demonstrate (using students as examiners) how roadside tests are performed. Have students practice the techniques derived from demonstrators for skill development. By team pairing each student will perform each of the roadside tests repeatedly until the instructor determines that the procedure is learned. Roadside test should include:

   a. Testing reaction time
   b. Vision

      (1) Acuity
      (2) Night blindness
      (3) Glare blindness
      (4) Depth perception
      (5) Color blindness

   c. Hearing
   d. Mental and nervous conditions
   e. Physical deficiencies and disabilities

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Lacy, George W. *Personal Injury, Scientific Automobile Accident Reconstruction.* New York, N.Y.: Matthew Bender.

LESSON PLAN 10

UNIT: Identify

LESSON PLAN TOPIC: Identify Learned Capabilities of the Driver

OBJECTIVES: The student will be able to:

1. List the general capabilities necessary for driving a motor vehicle
2. Identify improperly performed driver skills that may contribute to accident causes.

PREPARATION OF THE LEARNER:

Accident free driving requires both skill and information on the part of a driver. Accidents are often caused or contributed to by lack of skill and/or lack of knowledge on the part of the driver. Both of these are learned behaviors. This lesson is designed to determine the extent to which a given accident may be attributed to lack of skill and/or lack of knowledge on the part of the driver.

PRESENTATION:

Instructor's Note: Use class discussion and any visual aids necessary to develop the following information.

I. General learned capabilities of the driver

A. Physical manipulative driving skills

B. Use of driving skills in relation to environmental conditions

C. Ability to observe, comprehend, evaluate, and react to the driving situation

D. Other

II. Common skills of driving which may contribute to an accident

A. Examples:

1. Failure to evaluate traffic hazards in advance
2. Failure to control speed at hazardous locations
3. Failure to indicate turning
4. Anticipate possible movement of other vehicles and pedestrians
5. Improper handling of skids
6. Failure to recognize and identify highway road signs
7. Other

III. Indicators that the driver may lack the levels of experience required to avoid an accident

A. Examples:

1. Driver with less than six months of driving
2. Driver operating strange vehicle
3. Driver who has not driven over long period of time

4. Driver in a strange locale
5. Other

IV. Indications that would suggest the lack of skill and/or knowledge of a driver?

A. Examples:

1. Using improper gears
2. Locking the brakes
3. Giving incorrect signals
4. Improper turning

a. Cutting corner
b. Wrong lane usage

5. Disobeying traffic signs and signals
6. Improper parking—hazardous locations
7. Improper passing
8. Maximum or minimum speed restrictions
9. Other

APPLICATION:

1. Using driver education simulators (source: local high school), have students react to shapes of highway signs and perform instructor-specified driving skills.

2. Using pairs of students, have one student put the other through predetermined driving simulation exercises for the purpose of determining driving ability.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 11

UNIT: Identify

LESSON PLAN TOPIC: Identify Persons Other Than the Driver as Potential Sources of Information

OBJECTIVES: The student will be able to:

1. Identify persons other than the driver in an accident investigation scene.

PREPARATION OF THE LEARNER:

The accident investigator at the accident site has the responsibility to obtain facts and a true picture of what occurred. The accident investigator may question drivers and witnesses to get certain facts about the accident. This training period will give the student a working knowledge of how to locate witnesses. The specific techniques for interviewing will be covered in another lesson.

Provide an example of identifying persons from the instructor's own experience.

PRESENTATION:

Instructor's Note: It is suggested that the instructor prepare the necessary visual aids to increase the following information in addition to using class discussion.

I. Locating witnesses (6)

A. Look for witnesses as soon as you arrive at the scene

1. Examples:

a. May be talking to drivers
b. May be discussing what he observed with crowd

B. If only a few people at scene, ask each person if he saw accident and write down license numbers of each contact and their names.

C. Write down license numbers of cars at the scene or leaving scene area in order to contact these people later if necessary.

D. Ask the crowd if anyone can provide information on the accident.

E. If the driver makes an untrue statement within hearing of witnesses, the reaction of an individual may show he was a witness to the crash.

F. Ask the involved drivers if they observed any witnesses prior to or after the collision.

APPLICATION:

1. The instructor should set up several simulated accident situations using role playing as a method of class involvement. All students should be assigned to play either the part of the accident investigator or witnesses and passengers. The

specific objectives for the investigator would be to properly locate and identify all persons other than the driver at an accident scene.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston Illinois: The Traffic Institute, Northwestern University, 1971.

2. Inbau, Fred E., and Reid, John E., *Criminal Interrogation & Confession.* Baltimore, Maryland: Williams & Wilkins, 1962.

3. *Police Reference Notebook.* Washington, D. C.: International Association of Chiefs of Police.

LESSON PLAN 12

UNIT: Identify

LESSON PLAN TOPIC: Identify Vehicle Types and Components

OBJECTIVES: The student will be able to:

1. Identify the types of vehicles by their makes and models
2. Identify the major vehicle components, their location, and primary function.

PREPARATION OF THE LEARNER:

To enable an investigator to obtain accurate information, he must be able to identify the vehicle types. To assist in compiling investigation information, the major vehicle component parts and their function must be identified and described.

PRESENTATION:

Instructor's Note: Use various illustrations to promote the learning of vehicle types and parts.

I. Identify and describe the types of vehicles by their makes and models.

- A. Passenger cars
- B. Trucks
- C. Tractors
- D. Semi-tractor-trailer

II. Identify and describe the major components common to motor vehicles.

- A. Chassis
- B. Engine
- C. Transmission
- D. Steering system
- E. Brakes

APPLICATION:

1. Using slides, pictures, and transparencies, have the student identify the various vehicles, makes, and models.
2. Using appropriate visual aids, have the student identify, describe, and explain the major components of vehicles.

SUGGESTED REFERENCES:

1. Collins, James C., and Morris, Joe L. *Highway Collison Analysis*. Springfield, Illinois: Charles C. Thomas, 1967.

LESSON PLAN 13

UNIT: Identify

LESSON PLAN TOPIC: Identify Pre-Crash, Crash, and Post-Crash Vehicle Damge and Defects

OBJECTIVES: The student will be able to:

1. Describe contact, induced, and overlap damage in an accident situation

2. Identify damage to the vehicles and defects to the vehicles found at the accident scene which had been either present or caused previous to this accident yet was not a causation factor in it.

3. Identify pre-crash, crash, and post-crash damage and defects related to the accident.

PREPARATION OF THE LEARNER:

Automobile accidents invariably result in damage to at least one vehicle. It may be a "fender bender" or it may cause total damage to the vehicle. No matter what the damage may be, there will usually be contact damage and more than likely there will be induced damage. "What types of damage are these; where do they occur; what do they look like; and what do they mean?" are questions the accident investigator must answer. Those answers are vital to understanding how an accident happened and possibly provide answers about how to prevent future accidents.

Establish the importance of identifying damage and distinguishing between contact and induced damage, pre-crash, crash, and post-crash damage. Also to be able to establish a description of sequence of impact, especially for multiple impacts.

PRESENTATION:

Instructor's Note: Class discussion should develop the following information using the appropriate visual aids.

I. Damage

A. Define types of damage (6)

1. Contact
2. Induced
3. Overlap

B. Occurence of damage

1. Pre-crash

a. Examples: (6)

(1) Dents with rust
(2) Damaged headlight filaments
(3) Other

2. Crash

a. Examples: (6)

(1) Contact and induced damage resulting from crash
(2) Other

3. Post-crash

a. Examples:

(1) Wrecker damage
(2) Storage damage
(3) Other

II. Defects

A. Previous and noncontributing (6)

1. Example:

a. Non-working horn

B. Previous and contributing (6)

1. Examples:

(a) Faulty headlights or taillights
(b) Malfunctioning wipers
(c) Faulty tires
(d) Other

C. Differentiate between noncontributing and contributing defects

D. Vehicle parts to examine: (6)

1. Tires
2. Wheels
3. Springs
4. Steering gear
5. Brakes
6. Accelerator sticking
7. Windshield
8. Headlights
9. Taillights
10. Directional signals
11. Horns
12. Wipers
13. Rear mirror
14. Passengers
15. Freight
16. Other

APPLICATION:

1. Present four transparencies to the students and have them physically point out the

contact, induced, and overlapped damage. Have the students discuss what the damage indicates in relation to the accident.

2. At the wrecking yard, body shop, or parking lot each student will be given a case file for the predetermined vehicle. The student is to list in writing all contact induced and overlap damage which he finds on the vehicle.

3. In addition to the visit to a junk yard for an examination of various vehicles for pre-crash damage and defects, the following activities are suggested:

   a. Shown a simulated or actually wrecked automobile, the student shall be able to point out various types of noncontributory damage.
   b. Given a list of auto parts, the student will point out various types of damage to look for.
   c. Given a part from a recently wrecked auto, the student should be able to distinguish between recent and old damage.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. U. S. Army. FM 19-26. "Traffic Accident Investigation." Washington, D. C.: U. S. Government Printing Office, 1971.

LESSON PLAN 14

UNIT: Identify

LESSON PLAN TOPIC: Identify for Sources of Injury to Occupants and/or Pedestrians

OBJECTIVE: The student will be able to:

1. Examine the vehicle for the purpose of identifying occupant and pedestrian contact points

2. Identify on a worksheet, all causative factors of injury relating to the vehicle.

PREPARATION OF THE LEARNER:

Injuries and deaths caused by physical contact with components of the motor vehicle when a traffic accident takes place have increased greatly over the past years. A variety of responsibilities rests with the accident investigator which requires expertise in being able to identify the relationship of vehicle damage to personal injury.

Relate (from your own experience) a situation that exemplifies the importance of pinpointing the source of injury by examining vehicle damage (e.g., mirrors scalp).

PRESENTATION:

Instructor's Note: To be more effective this unit should be supplemented by audiovisual presentations prepared by the individual instructor. Possible sources of A/V material may be in-depth reports and photographic files of the local police or newspapers. Auto salvage yards and police impounding lots offer the instructor an opportunity to provide numerous damaged vehicles at one site.

I. Importance of locating and identifying sources of injury when examining the vehicle.

   A. Answer important questions about how the accident happened.

   B. For gathering physical evidence in motor vehicle and pedestrian hit and run (skip) accidents.

   C. To gather research statistics to assist in preventing further injuries.

II. Proper method of examining the vehicle

   A. Approach the vehicle in a manner for the preservation and protection of evidence.

   B. Systematically analyze it for signs of damage that may have caused injury.

III. Examine for evidence relating to physical damage

   A. Explain and demonstrate the procedure for a component examination

      1. Exterior

         a. Front end
         b. Left side
         c. Right side
         d. Rear end
         e. Hood area
         f. Engine compartment
         g. Undercarriage

2. Interior

   a. Top structure
   b. Windshield
   c. Instrument panel
   d. Steering wheel assembly
   e. Rear view mirror
   f. Seat frame
   g. Interior hardware

B. Point out areas of vehicle with illustrations in the order of examination.

C. Chalk off areas of the demonstration vehicle with colored chalk to show order of examination. Use graduated type.

IV. Specific types of injuries to look for in occupants of automobile collisions

A. Example—head-on collision (25)

   1. Driver front—chest injury—steering wheel
   2. Rider front — head — dash or windshield
   3. Driver side rear — pelvis — seat
   4. Rider side rear — pelvis — seat

B. Example — side collision

C. Example — rear collision

V. Types of vehicle pedestrian contact injuries (25)

1. Vehicle striking victim
2. Victim striking vehicle after initial impact
3. Victim striking ground
4. Victim being run over by vehicle

VI. Specific vehicle characteristics and their relationship to possible injury to the occupants and pedestrians

A. Establish positions of injured persons within the vehicle

B. Establish the driver of the vehicle

APPLICATION:

1. The instructor should provide handouts of exterior and interior worksheets of various types of vehicles and let the students discuss possible damage points on the vehicle as they might relate to various vehicle-pedestrian accident situations or occupant injury in other types of motor vehicle accidents.

   Example:
   a. Medium-size adult male struck by passenger car traveling approximately 25 miles per hour. Point of impact is center of front bumper.

b. Middle-aged woman involved in head-on collision at 40 miles per hour. She is sitting upright in the right front rider's seat and was not wearing a seat belt.

The instructor will evaluate progress of individual students as they respond to the problem solving situation.

2. Students will individually view selected damaged vehicles and prepare interior and exterior vehicle worksheets pinpointing points of damage caused by body contact.

   Locations of vehicles to be reviewed:

   a. Auto salvage yards
   b. Police impounding lot
   c. Wrecker storage lot

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis*. Springfield, Illinois: Charles C. Thomas, 1967.

3. *Collision Performance and Injury Report — Reference Manual*. General Motors Corporation, 1970.

4. Harris, Raymond I. "Automobile Fatalities." *Outline of Death Investigation*. Springfield, Illinois: Charles C. Thomas, 1967.

5. Huelke, Donald F., and Davis, Rollin A. *Pedestrian Fatalities*. Ann Arbor, Michigan: Highway Safety Research Institute, The University of Michigan, 1969.

6. Snyder, Lemoyne. "*The Investigation of Deaths Due to Highway Accidents.*" *Homicide Investigation*. Springfield, Illinois: Charles C. Thomas, 1967.

7. Svensson, Arne, and Wendel, Otto. *Techniques of Crime Scene Investigation*. New York, N.Y.: American Elsevier, 1971.

LESSON PLAN 15

UNIT: Identify

LESSON PLAN TOPIC: Identify and Determine Environmental Attributes

OBJECTIVES: The student will be able to:

1. Determine type, composition of roadway, and markings on the surface of the road.

2. Identify the pertinent attributes of the roadway and environment at an actual or simulated accident site.

3. Identify where to obtain other sources of information about environment, i.e., engineers.

PREPARATION OF THE LEARNER:

An important area that should not be overlooked in the investigation of an accident scene is the possibility of roadway factors as contributing causes of the accident. These factors are not always apparent to the investigator as the following illustration will point out.

EXAMPLE: A roadway had been resurfaced and widened. Following the improvement there were several head-on collisions and cars running off the roadway at night that could not be explained from the accident reports. An investigation team checked the area and found that stripes for the center and edge of the road were not visible. The stripes were painted on the road and the accidents stopped.

Your ability to recognize these types of conditions and accurately record information can save lives.

PRESENTATION:

Instructor's Note: The instructor should prepare the audiovisual materials to supplement the following information,

I. Highway and roadway definition (as defined by state motor vehicle laws)

A. Attributes

1. Any inherent characteristic of a trafficway, a vehicle, or a person making a trip on a trafficway that affects the probability of a traffic accident.

B. Highway

1. The entire width between the boundary lines of every way or place of whatever nature open to the use of the public for purposes of vehicular travel in this state, including the streets, alleys, and publicly maintained parking lots in counties, cities, and towns.

C. Roadway

1. That portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the shoulder.

2. A highway may include two or more roadways if divided by a physical barrier or barriers or unpaved area.

II. Permanent Attributes: Type, Composition of Roadway, and Markings

A. Roadways (6)

1. An unpaved road
2. A marked one-lane paved road
3. Marked two, three, and four lane roads
4. Divided roadway or one-way street
5. Expressways

B. Types of roadways, compositions, and descriptions relating to the condition (6)

1. Concrete

   a. New, sharp
   b. Traveled
   c. Traffic polished

2. Asphalt or tar

   a. New, sharp
   b. Traveled
   c. Traffic polished
   d. Excess tar

3. Brick

   a. New, sharp
   b. Traffic polished

4. Stone block

   a. New, sharp
   b. Traffic polished

5. Gravel

   a. Packed, oiled
   b. Loose

6. Cinders

   a. Packed

7. Rock

   a. Crushed

8. Metal grid

   a. Open

C. Roadway markings

1. Signs
2. Signals
3. Geometric characteristics

    a. Curvature
    b. Grade
    c. Crown
    d. Width

III. Temporary Attributes

A. Modifiers of attributes

1. Weather

    a. Fog
    b. Rain
    c. Other

2. Loose material

    a. Gravel
    b. Leaves
    c. Glass
    d. Other

B. Determine conditions of environment at time of accident

1. Contributory factor to accident causation
2. Noncontributory factor to accident causation

IV. Additional sources of information as it relates to the environment

A. Examples:

1. Engineers
2. Maintenance personnel
3. Highway designers
4. Others

APPLICATION:

1. Students will independently complete a "Roadway Description Checklist" and diagram relating to environmental attributes.

2. Under the teacher's supervision, students will critique an accident and record observations and information, giving their views as to what factors in the roadway environment might have contributed to the accident.

SUGGESTED REFERENCES:

1. Baerwald, John E., ed. *Traffic Engineering Handbook*. Washington, D. C.: Institute of Traffic Engineers.

2. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 16

UNIT: Identify

LESSON PLAN TOPIC: Identify Pre-Crash Marks on the Roadway, Shoulder, and Environment

OBJECTIVES: The student will be able to:

1. Demonstrate familiarity with terminology regarding roadway/highway descriptions and types of marks

2. Demonstrate his ability to identify valid pre-crash marks on the roadway, shoulder, and environment

3. Detect and interpret pre-crash marks on the roadway such as skidmarks, scuffmarks, shoulder marks, etc., in order to determine the behavior of the driver and vehicle prior to impact.

PREPARATION OF THE LEARNER:

Instructor's Note: Relate experiences involving identifying and interpreting pre-crash marks both correctly and incorrectly and the results to illustrate the importance of this unit.

The lesson could be introduced with a definition of "pre-crash" marks. Point out that the total performance of the investigator is evaluated by considering not only what he does but how he does it. Stress the need for detection and interpreting pre-crash marks at correct application of all evidence obtained during an investigation. Stress the factual aspects of the evidence in establishing a sequence of events, e.g., driver actions, vehicle maneuvers, speeds, etc., from vehicle action as to what factors may have produced these events may be developed.

PRESENTATION:

I. Terminology — Define and Discuss

A. Roadway/highway descriptors

1. "Position and path"
2. Buttresses
3. Shoulder (berm)
4. Abutments
5. Delineators
6. Guard rails
7. Road composition

a. asphalt
b. amesite
c. concrete
d. dirt
e. others

8. Identification points

a. public works markings
b. signings
c. engineering markers
d. light poles

Note: Point out dichotomies, i.e., universality of some markings to be found in local areas.

9. Others

B. Types of marks

1. Skidmarks
2. Side skidmark, scuffmark
3. Centrifigal skidmark (critical speed scuff)
4. Impending skidmark
5. Tire shadow mark
6. Furrow or plow-up mark
7. Squeegee mark
8. Erasure mark
9. Overlapping skidmarks
10. Skips
11. Gap or skip skids

Note: Remind class that each specific term has a particular meaning and that interchange of terms can cast doubt on the investigation.

II. Demonstrate aspects of pre-crash marks as they relate to accident investigation

A. Skidmarks, scuffmarks (43)

1. Must establish by reasonable inference that the marks were made by the vehicle in question based upon the wheel base, tread width, and tracking width which serve to identify marks with involved vehicles

2. Skidmarks are used to compute the miles per hour of vehicles in crashes

3. To fix the point of impact

4. To determine who was on the wrong side of the road

5. When and where and if brakes were applied

6. Determine nature and cause of skidmarks and scuffmarks

7. A map is necessary to relate the scene geometrics, place the sequence of events in a time-space perspective, etc.

8. Marks on road help to reconstruct accident or to locate area of impact (area of engagement)

9. Other

III. Pre-crash marks as aid to total accident investigation

Note: The instructor should draw tire tracks to center and edge of roadway. Explain driver may be sleepy, drunk, doped, or have a low tire. Draw some skidmarks. Explain how they indicate possible speed factor.

A. Clues as to how the accident happened

B. Clues as to why the accident happened

1. May show lack of driver's actions which may in turn indicate the driver's condition involved

   a. Examples:

      (1) Drunk
      (2) Sleepy

2. May indicate vehicle condition

   a. Examples:

      (1) Undercarriage
      (2) Tires

3. Indicate road conditions

   a. Examples:

      (1) Holes
      (2) "Wash boards"
      (3) Not painted

C. For reconstruction of accident as the sequence of events

Instructor's Note: It is suggested that the instructor use transparencies and blackboard to show the differences in scuffs, skidmarks, scratches, gouges, prints.

APPLICATION:

1. Students will proceed independently with more teacher prepared accident diagrams. Teacher circulates in class and asks questions of individuals regarding procedures of identifying pre-crash marks on the roadway, shoulder, and environment.

2. Using instructor-prepared skidmarks and scuffmarks on parking lot, etc., students will perform on-site and carry out proper investigation procedures singly or in pairs. The student will apply his classroom knowledge on-site by doing the following:

   a. Identify pre-crash marks on scene (6)
      (1) Show gray area on skidmarks and explain.
      (2) Show difference between tire going sideways and one skidding.
      (3) Record shoulder skids separately from paving asphalt skidmarks.
      (4) Chalk start and ending of marks.
      (5) Show difference between tire print and skid.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. *Outline of Measurements to Locate Results of Traffic Accident*. Evanston, Illinois: The Traffic Institute, Northwestern University.

3. Rifas, Richard A. *Legal Aspects of Skidmarks in Traffic Cases*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1970.

4. *Summary of Possible Results of Traffic Accidents on Road*. Evanston, Illinois: The Traffic Institute, Northwestern University.

LESSON PLAN 17

UNIT: Identify

LESSON PLAN TOPIC: Identify Position and Angle of Infliction

OBJECTIVES: The student will be able to:

1. Determine and point out the position and angle of infliction
2. Relate orally how he formed his conclusion

PREPARATION OF THE LEARNER:

Discuss why a student should be concerned about angle of infliction. Illustrate, using appropriate visuals, positions and angles of inflictions as they relate to investigation data.

PRESENTATION:

I. Angle of infliction

A. Direction of opposing forces upon contact

B. Show slides with obvious angles visible.

C. Have student physically point out the angle.

II. Determine angle of infliction

A. Demonstrate how the angle of infliction is best determined by areas of collapse.

B. Review how induced and contact damage will aid in this determination.

APPLICATION:

1. The instructor should move the class to a wrecking yard. Have students point out and tell the angle of infliction on a variety of wrecked vehicles, and explain to instructor his reason for his opinion. This should be done for each vehicle in writing and then each student orally tell his opinion. Corrections should be made at this time. Have pictures of these vehicles. Return to class and critique the problems.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accitent Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis*. Springfield, Illinois: Charles C. Thomas, 1967.

LESSON PLAN 18

UNIT: Identify

LESSON PLAN TOPIC: Identify Debris

OBJECTIVES: The student will be able to:

1. Differentiate on a worksheet, the types of debris of an accident scene

2. Identify and evaluate certain varieties of debris to determine:

   a. Significance of the debris
   b. Area of impact (area of engagement)
   c. Direction and path of traffic units
   d. Final positions of traffic units involved
   e. Vehicle performance

PREPARATION OF THE LEARNER:

Explain why it is important for the students to be able to evaluate the types and varieties of debris and how they will aid an investigator to determine how and why the accident happened.

Recount a case where an untrained investigator demonstrated the inability to make proper evaluations.

Relate a case where a student demonstrated his ability to apply the techniques of debris evaluation.

This is highly factual information which if properly interpreted confirms/rejects driver/witness statements and guides the investigation.

PRESENTATION:

Instructor's Note: Illustrate with the proper visual aids.

I. Define debris (6)

   A. The accumulation of broken parts of vehicle, rubbish, dust, and other materials left at the accident scene by a collision.

II. Types of debris

   A. What are the types of debris?

      1. Under body
      2. Vehicle parts
      3. Vehicle fluids
      4. Cargo
      5. Road material
      6. Clothing
      7. Blood
      8. Other

   B. What are the different varieties of debris?

1. Under body debris

   a. Mud
   b. Dirt and dust
   c. Rust
   d. Paint
   e. Road tar

2. Vehicle parts

   a. Grease
   b. Body parts
   c. Chassis parts
   d. Tires

3. Vehicle fluids (6)

   a. Coolant or radiator water
   b. Oil
   c. Brake fluid
   d. Transmission fluid
   e. Battery acid

4. Cargo (6)

   a. Liquid

      (1) Gas
      (2) Oil
      (3) Milk
      (4) Corrosives

   b. Granular

      (1) Grain
      (2) Feed
      (3) Gravel
      (4) Coal
      (5) Cement
      (6) Salt, etc.

   c. Other

      (1) Packages
      (2) Luggage
      (3) Livestock
      (4) Fruit

5. Road material

   a. Gravel
   b. Cinders
   c. Pebbles
   d. Glass, tree limb

6. Clothing (6)

a. Clothing fragments

7. Blood (6)

a. Human
b. Animal

III. Significance of debris

A. Points of evaluation

1. Shows path of vehicle after collision
2. Shows whether vehicle was stopped or slowed after collision
3. Helps locate point of impact
4. Establishes final positions of vehicles
5. Indicates where injured persons were thrown, crawled, or moved
6. Other

IV. Evaluating the debris

A. Under body debris

1. Area of engagement (Instructor's Note: Discuss how momentum will affect location of the deposit of debris.)
2. Direction of travel

B. Vehicle parts

C. Vehicle fluids (6)

1. Spatter in relation to area of engagement
2. Dribble in relationship to direction of travel
3 Runoff in relation to final position

D. Cargo (6)

1. Liquid

a. Spilled liquid cargo illustrating how it tends to obliterate other evidence

2. Granular

a. Area of scatter indicating vehicle direction before collision

3. Other

a. Indicating vehicle direction after collision

E. Road material

1. Show how the appearance of material indicates vehicle position or location during collision.
2. Appearance of material indicating vehicle location immediately after impact

F. Clothing (6)

1. Showing probable location where passenger was ejected from vehicle

G. Blood (6)

1. Showing where body came to rest
2. Showing where body was located in the vehicle

APPLICATION:

1. All students will examine photographs of on-site accident scenes and identify the different types of debris. A worksheet could be provided to be used by each student to indicate initial contact, maximum engagement, path and direction of travel, and final position. The instructor should supervise activities of the students, measure progress, and check for accuracy.

2. A contrived on-site accident scene should be set up by several members of the class as part of an assignment. The students should set up the scene in a suitable area, such as a parking lot.

   a. Position two cars in final positions.
   b. Pour water in front of each vehicle to represent runoff.
   c. Drip oil to indicate path of travel.
   d. Deposit dirt to represent maximum engagement.
   e. Spatter oil forcibly on pavement to represent initial contact.
   f. Scatter pieces of chrome and dirt to represent direction of travel.
   g. Use ketchup to indicate blood for indication of passenger ejection.

   The instructor should assign various students to conduct the mock investigation. The rest of the class should record the measurements on individual worksheets.

   Instructor Check Points: Student must be able to properly record and identify the points listed in the evaluation topic.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Svensson, Arne, and Wendel, Otto. *Techniques of Crime Scene Investigation*. New York: American Elsevier Publishing Co., 1965.

3. Turner, William W. *Traffic Investigation*. San Francisco: Aqueduct Books, 1965.

LESSON PLAN 19

UNIT: Identify

LESSON PLAN TOPIC: Identify Vehicle Parts with Crash Marks on the Roadway and Surrounding Environment

OBJECTIVES: The student will be able to:

1. Locate and identify crash damage on highways and environment under supervision on field trip noting any damage that contains particles of environment

2. Shade in physical evidence damage on work handout sheets and label what in the environment caused damage to the vehicle.

PREPARATION OF THE LEARNER:

Using appropriate visual aids, the instructor will demonstrate how to identify the following:

1. Damage to vehicles caused by environment
2. Damage to environment caused by vehicle

PRESENTATION:

I. Locating and identifying crash damage resulting from the environment

A. Identify damage to vehicle including undercarriage.

B. Illustrate the shape of damage, type of scratches and/or debris left on vehicles that will lead to object struck.

C. Demonstrate how to work back over path of vehicle and match damage on vehicle to the environment.

D. Certain types of environment leave definite imprints on vehicles

1. Imprints—clearly show dents which are pressed into damaged areas of vehicles involved

2. Examples:

a. Telephone poles leave wide grooves on body of vehicle.
b. Rocks will leave rough scratches or tears in vehicle surface and usually leave fine powder in scratch.
c. Trees will groove the body and will usually leave bark or wood particles.
d. Others

II. Identify damage to environment

Note: Simulation could be used to demonstrate identification process.

A. Show scratches on pavement, rocks, even scratches on rusted wire.

B. Show paint transfer from vehicle to environment.

C. Road contact by vehicle results in damage as follows: (6)

1. Types of gouges

a. Chip gouges

(1) Pavement torn out in chunks

b. Chop gouges

(1) Made by a broad sharp edge across the direction of movement of the part marking the gouge.
(2) Usually transmission housings and cross frame members make this type.

c. Groove gouges

(1) Deep, long, narrow furrows left by bolts and similar parts.
(2) The depth of the bolt into the surface will be greater than the nut on that bolt and can easily be identified by two grooves in one.

APPLICATION:

1. Using prepared slides illustrating damage to vehicles and environment, students will identify what caused the damage on instructor-prepared handouts.

2. Individual students should be assigned a field trip to a junk yard or any garage to locate and identify damage on vehicles. Individual reports will be recorded for review by the instructor and/or other students.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis*. Springfield, Illinois: Charles C. Thomas, 1967.

LESSON PLAN 20

UNIT: Identify

LESSON PLAN TOPIC: Identify Area of Impact from Marks on the Roadway

OBJECTIVES: The student will be able to:

1. Describe the reasons for establishing the area of impact
2. Establish the area of impact using physical evidence found at an accident scene.

PREPARATION OF THE LEARNER:

Review all units applicable to this unit prior to starting lesson. Instruct students to bring to class clipboard, pencils, and notebook.

PRESENTATION:

Note: You can have more than one point of impact depending upon the type of accident.

I. Area of impact

A. Define "area of impact"

1. The first injury or damage causing the event

B. Review definitions:

1. Skids
2. Scrubs
3. Chips
4. Gouge marks
5. Debris

II. Reasons for establishing the area of impact

A. To determine where the accident occurred in regard to reconstruction

B. To determine how the accident occurred in regard to reconstruction

C. For relocation of vehicles

D. To establish causes

E. To account for damage

III. How to establish the area of impact

A. Location of vehicles

1. Vehicles at rest at area of impact

a. Example—car hits pole

2. Vehicles at rest at other than area of impact

B. Physical evidence in relation to impact

1. Skids

a. Change in direction of skid while wheels still locked

2. Debris

a. Soil deposits
b. Fluid
c. Others

3. Marks on roadway

a. Gouges
b. Scrapes
c. Scuffs
d. Chips
e. Scrubs
f. Others

4. Others

C. Involved drivers, passengers, witnesses

1. Statements to determine area of impact when no physical evidence is available

Note to Instructors: Using simulated or actual accident scene, demonstrate how to determine the area of impact from marks on the roadway and techniques for numbering and identifying evidence.

APPLICATION:

1. Using handout with diagrams and descriptive sentences, have students identify the type of accident or classification such as:

a. on roadway—other noncollision
b. off roadway—collision involving pedestrians
c. on roadway—collision involving motor vehicle
d. off roadway—collision involving parked motor vehicle
e. off roadway—collision involving fixed object

2. At a simulated accident situation, the students will identify the area of impact through analysis of the physical evidence available. Simulated accident situations could be prepared by the instructor or by teams of students for analysis by other class members.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. National Safety Council. *Manual on Classification of Motor Vehicles Traffic Accidents*. Chicago, Illinois: National Safety Council.

LESSON PLAN 21

UNIT: Identify

LESSON PLAN TOPIC: Identify Post-Crash Roadway Marks in Relation to the Accident

OBJECTIVES: The student will be able to:

1. Identify post-crash roadway marks which indicate the post collision behavior of vehicles.

PREPARATION OF THE LEARNER:

The key to successful reconstruction of a traffic accident is the ability of the investigator to determine relative motions of vehicles during and after the initial collision. This will enable the investigator to reach a conclusion as to positions prior to and at area of impact.

PRESENTATION:

Instructor's Note: A series of actual accident scenes, including damage to vehicles clearly shown, and post-collision marks and final rest positions can be shown to students. The following information is developed by the instructor through class discussion.

I. Identification of post-crash roadway marks as they relate to the accident

A. Marks and debris on the roadway

1. Flat tire scuff
2. Smear from collision
3. Offsets in skidmarks
4. Debris—all types
5. Gouges
6. Scratches
7. Other

B. Marks off the road

1. Furrows
2. Ruts

C. Establish meaning and significance of marks

1. Direction of marks as they relate to motion of vehicles
2. Change in motion
3. Change in force direction
4. Driver behavior

a. Example:

(1) Release of brake pressure

5. Change in roadway markings

a. Example

(1) Skid marks to scuffs

6. Others

II. Importance of identifying post-crash roadway marks

A. To aid in reconstruction of the accident

B. Determine physical evidence as a result of the collision

C. To determine series of events as they occurred

D. To determine if physical evidence has been moved

E. To determine behavior of vehicles

APPLICATION:

1. Set up collision utilizing vehicles with compatible damage, put skid marks down, use vehicle parts and underbody debris. If possible, obtain two older scrapped vehicles (running condition) and actually create collision. Have students handle entire on-site investigation and submit reports. Have students identify significant marks and explain significance.

2. Operation or steps on scene:

   a. Instructor should follow student through post-collision movement, correct errors, and explain.

      (1) Identify post-crach marks on the road and off the road
      (2) Outline significance of each mark

         (a) What caused the mark?
         (b) Relationship to movement of vehicle?
         (c) At what point after the collision did the mark occur?

      (3) Evaluate damages in relation to post-crash data

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis.* Springfield, Illinois: Charles C. Thomas, 1967.

LESSON PLAN 22

UNIT: Collect

LESSON PLAN TOPIC: Pre-Crash, Crash, and Post-Crash Actions and Reactions

OBJECTIVES: The student will be able to:

1. Reconstruct the events occurring from the point of possible perception of the hazard to the point of the final position of the parties involved by questioning the involved parties and by viewing the physical evidence present at the scene.

PREPARATION OF THE LEARNER:

In order to reduce accidents we must reduce probabilities of accidents occurring, realizing we cannot reduce the risk completely. At any time while driving we may become vulnerable, because the possibility exists that we may make an error and produce the risk of a collision. When an error is made, the risk of an accident becomes imminent. By studying the efforts made by the driver coupled with vehicle and highway conditions then and there existing, we can better understand how and why accidents occur. We shall analyze step-by-step from the point of possible perception of the hazard through to the final position of the involved parties.

It is essential to determine the driver's movement to enable the investigator to arrive at a logical conclusion, based on the collected accumulated physical facts and evidence, upon reconstructing and identifying a series of events beginning at a given point and time for possible perception through final position as it relates to driver's action.

PRESENTATION:

I. Chain of events (6)

A. Perception

B. Reaction

C. Impact

D. Final Position

II. Reconstruct the chain of events

A. Procedure to determine chain of events

1. Question the involved parties
2. View the physical evidence present at the scene

B. Perception

1. Encompasses

a. When driver could *first* have seen danger (points of possible perception)?
b. When driver is affected by distractions?

(1) View obstruction

(2) Conditions
(3) Affected by physical deformities

c. When did driver perceive?

(1) What action was important?
(2) When was action implemented?
(3) How was action implemented?

2. Secondary unit

a. Location when first observed
b. Position on the traffic way

(1) Lane
(2) Distance from reference point
(3) Other

c. Estimated speed

3. Primary unit

a. Position on the traffic way

(1) Lane
(2) Distance from reference point
(3) Other

b. Estimated speed
c. Environmental conditions

(1) Traffic conditions
(2) Highway conditions
(3) Control devices condition
(4) Driver's physical condition (impairments)
(5) Safety devices utilized

C. Reaction

1. Encompasses

a. When the movement of action actually begins.
b. Driver by physical movement, responds from perceiving, recognizing to action.
c. Driver sizes up situation and starts to do something about it.
d. First action taken by driver to escape from collision course and to avoid hazard and escape danger

2. Theory of perception, intellection, emotion, volition

a. Perception—driver perceives situation
b. Intellection—driver takes time to understand situation
c. Emotion—affects manner in which perception and intellection are brought to volition
d. Volition—the will to act

3. Primary driver's evasive actions

a. Sound a warning
b. Braking
c. Turning movement(s)
d. Acceleration

D. Impact (Note: Chain of events may involve noncollision events)

1. Encompasses

a. The first accidental touching of an object collided with by a traffic unit in motion. (Before this, no force is present; after this, force is present.)
b. The vehicles penetrating each other as much as they will and the impact slowing much greater than braking slowing.
c. When the vehicles cease to touch each other and braking by sliding continues.

2. Essential information

a. Location on trafficway
b. Location of each unit on roadway at impact

(1) Examples:

(a) Direction of travel
(b) Lane
(c) Other

c. Location of impact damage on each unit

(1) Examples:

(a) Dent on fender
(b) Crushed door(s)
(c) Others.

3. Effects of the impact

a. Parties thrown from vehicles
b. Injuries suffered
c. Doors on vehicles open
d. Movement of vehicles after impact
e. Other

E. Final position

1. Encompasses

a. The coming to rest of traffic unit
b. Stabilized the accident situation
c. Stopping may occur with or without control by driver

2. Essential information

a. Location on or off trafficway
b. Direction facing

III. Summary

A. Chain of events

1. Perception of a situation
2. Reaction to the situation
3. Impact between the involved parties
4. Final positions after impact

APPLICATION:

1. Using a simulated accident scene or a scale diagram:

   a. Have students play the role of:

      (1) Involved units
      (2) Accident site investigator

   b. Relate to the class the involved parties' actions and reactions by a series of questions and explanations.
   c. Demonstrate his understanding of the events of an accident by pointing out and explaining each step of the accident from perception through final position.

SUGGESTED REFERENCES:

1 Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Cornell Aeronautical Laboratory, Inc. *Accident Site Investigation.* Interview Lecture, 1971.

3. Institute of Transportation and Traffic Engineering Manual. *Fundamentals of Traffic Engineering.* Berkeley, California, 1969.

4. Skillman, T. S. *Road Safety—How to Reduce Road Accidents.* The Re-Appraisal Society. David McKay Company, Inc.

LESSON PLAN 23

UNIT: Collect

LESSON PLAN TITLE: Interview

OBJECTIVES: The student will be able to:

1. List in writing the suggested basic qualifications for an interviewer and evaluate these qualifications
2. List in writing the steps in the process of interviewing the involved party and obtaining the desired information
3. Identify the essential information to be obtained as it relates to the accident
4. List factors which influence the involved parties' information regarding the accident
5. Demonstrate in a simulated (mock) classroom situation his knowledge of the basic interviewing techniques to be applied in the interview situation.

PREPARATION OF THE LEARNER:

The accident site investigator's success rests to a large extent upon his ability to extract information about the incident from those persons connected with it in some way, e.g., drivers, passengers, victim, witnesses, etc.

His skill (success) as an interviewer is in turn dependent upon his understanding of human reactions, (psychological and physiological), and his ability to apply this knowledge in a typically tension-provoked and threatening situation. This unit of instruction is designed to acquaint you with various factors and considerations in the interview process.

Obviously, not all interviews are conducted at the scene. Whatever the reason for delay, the interview should be conducted as soon as possible after the event. The pace should, if possible, be one that will give the interviewer the psychological advantage. This must be determined according to the total circumstances. The interview should be held where there will be as few distractions as possible, e.g., not while the subject is being treated for injuries, not at his home if small children are present.

PRESENTATION:

I. Purpose of the interview

- A. Reconstruct events of accident
- B. Add to the total information obtained from all sources
- C. Verify or disprove some opinions based on observation of physical evidence of statements made by other drivers and witnesses.
- D. Determine cause of accident

II. Basic qualifications for an interviewer (39)

- A. Part salesman

B. Part action

C. Part sociologist

D. Possess empathy

E. Be intelligent

F. Possess insight

G. Use discretion

H. Possess perseverance

I. Able to establish rapport with interviewee

J. Possess a marked degree of tolerance

K. Have a forceful personality

L. Be sympathetic and understanding

M. Possess practical knowledge and have good common sense.

N. Able to converse on the interviewee's level

O. Win confidence, induce interviewee to voluntarily offer the information

III. Procedure for interviewing

A. Select time and location (at accident site) (6)

1. Interview person as soon as possible

a. Upset, he may give more accurate facts than at a later time
b. Little time to rationalize or invent story
c. May give information he ordinarily would not give
d. True of intoxicated person

2. Identification

a. Investigator
b. Interviewee

3. Obtain all information possible while it is fresh in the mind.
4. Make arrangements for follow-up interviews.

B. Select time and location (not at accident site)

1. Identification

a. Investigator
b. Interviewee

2. Interview in the appropriate setting

a. Example:

(1) Do not interview at work
(2) Do not interview at anytime in which the interviewee will not be at ease
(3) Do not interview when interviewee will not be able to give you his undivided attention

C. Preparation

1. Review all information available concerning the event
2. If possible, learn a little background on the interviewee
3. Prepare a check list so you don't overlook an important point
4. Be aware of state statute requiring involved parties to give certain information to investigator

D. Warming up

1. First few minutes will set the tone of the interview
2. Do not permit a personality clash
3. Open with a small amount of general conversation to put interviewee somewhat at ease
4. Maintain a business-like manner
5. Allow interviewee to tell the story his way and don't interrupt or take notes at this point
6. "Size up" the interviewee as to his personality traits, educational background, intelligence, age, sex, etc.

E. Introduction to questioning

1. Don't let the interview digress
2. Review "story" with interviewee
3. This time take notes
4. Guide the conversation
5. Check all inaccuracies
6. Do not rush, but take your time
7. Be alert to the witness who is "too interested"

F. Techniques of questioning

1. Question participants separately

a. Then let them tell story in front of each other
b. Reliability of statement important
c. If party dazed or shocked, may have to interview twice

2. Use direct questions
3. Ask one question at a time
4. Do not imply an answer
5. Keep questions simple
6. Don't ridicule
7. Allow the interviewee to answer your questions in his own manner
8. Do not insist on "yes" or "no" answers
9. Maintain a positive attitude
10. Be objective
11. Be flexible

a. No prejudices
b. Keep yourself out of situation

12. Supply the interviewee with your name and telephone number as he may recall something later

IV. Factors affecting information obtained from involved parties (6)

A. Tension—even fear

1. Because you are investigator

B. Injuries

C. Emotional stress

D. Influence of alcohol and drugs

E. Physical illness

F. Personal problems

G. Rationalization

H. Temporary state of amnesia

I. Evading responsibility

V. Factors determining the nature and degree of response

A. Individual reaction to a given threat (physical or psychological) depends upon many factors

1. Total personality
2. Type of situation
3. Guilt feelings and/or a sense of responsibility
4. Physical injuries
5. Consequences beyond the legal or direct financial implications
6. Involved parties opinion of accident investigation's department or agency

VI. Cues the interviewer looks for that might affect the interview (6)

A. Verbal cues

1. Examples:

a. Boisterous
b. Braggart
c. Overwillingness to talk
d. Others

B. Non-verbal cues for the interviewer

1. Examples:

a. Looking away or down
b. Sweating
c. Shivering

d. Dry mouth
e. Others

APPLICATION:

1. Provide handout containing several situations which might present themselves to accident investigators and have students assume role of investigator and driver and conduct interviews and interrogations, and have other students observe and take part in critique. SUGGESTED SITUATIONS:

   a. Driver uncommunicative. Furnishes minimum information required. Anxious to leave. "See my lawyer."
   b. Driver very mad at other driver and investigator. Says accident not his fault. "Why bother me?"
   c. Driver shocked and dazed but no visible injuries.
   d. Driver very talkative about everything but accident.

2. The student(s) will be given an accident investigation topic. He will define the topic, prepare a list of investigative steps to be taken, emphasizing the interview portion, and present the mock accident interviewing situation before the class in a role playing manner.

3. Work in cooperation with local authorities and observe an interview session if facilities such as one-way mirror is provided.

SUGGESTED REFERENCES:

1 Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Inbau, Fred E., and Reid, John E. *Criminal Interrogation and Confession*. Baltimore, Maryland: Williams & Wilkins, 1962.

3. O'Hara, Charles E. *Fundamentals of Criminal Investigation*. Springfield, Illinois: Charles C. Thomas, 1971.

4. *Police Reference Notebook*. Washington, D.C.: International Association of Chiefs of Police.

5. "Questioning Drivers and Witnesses in Accident Cases." Evanston, Illinois: The Traffic Institute, Northwestern University, 1954. (Motion picture)

LESSON PLAN 24

UNIT: Collect

LESSON PLAN TOPIC: Collect and Preserve Physical Evidence

OBJECTIVES: The student will be able to:

1. Collect, preserve, and store any and all physical evidence related to an accident crash scene.

PREPARATION OF THE LEARNER:

Stress by using examples the positive and negative results of recording, collecting, and preserving physical evidence.

PRESENTATION:

I. Places to look for evidence

- A. Final position
- B. Path after collision
- C. Near point of collision
- D. The path of each vehicle
- E. Possible path of hit and run vehicle
- F. Interior of vehicle
- G. Fixed objects

II. Collection of evidence (6)

- A. Broken parts of vehicle
  - 1. Hit and run
    - a. Examples:
      - (1) Handle
      - (2) Lens
      - (3) Fragments
      - (4) Bumpers
      - (5) Hub caps
      - (6) Others
- B. Paint markings or scrapings
  - 1. Removal techniques
  - 2. Location
    - a. Fixed objects

b. Clothing
c. Other vehicles

C. Hairs, fibers, wood, etc., that might indicate:

1. Pedestrian accident
2. Hit and run
3. Cycles
4. Animals

D. Tire and foot prints

1. Casts

a. Plaster of Paris
b. Sulphur
c. Others

2. Photographing
3. Dusting and lifting

III. Preservation of evidence (6)

A. General kinds of materials

1. Liquids

a. Collect at least one teaspoon

(1) Examples:

(a) Medical dropper
(b) Straw
(c) Clean cloth
(d) Glass container

2. Small objects

a. Pieces of cloth, hair, paint, dirt, small parts of vehicle
b. Place in clean envelopes and seal

3. Large objects

a. Parts of vehicle
b. Boxed, bagged, or wrapped

4. Vehicles

B. Labeling information

1. Who found
2. Type and nature
3. Exact place found

a. Roadway

b. Vehicle
c. Position

4. Condition when found

a. Wet
b. Dry
c. Broken
d. Clean
e. Dirty

5. Possible connection with accident
6. Personal identifying marks

C. Storage

1. Under adequate security
2. Record of where stored for safekeeping

APPLICATION:

1. From an actual accident scene photograph, have trainee identify the evidence that should be collected and describe the preservation method to be used.

2. Using a simulated (mock) accident scene have students correctly collect, label, and preserve all physical evidence.

SUGGESTED REFERENCES:

1. Stuckey, Gilbert. *Evidence for the Law Enforcement Officer. Criminal Investigation and Physical Evidence Handbook*. New York: McGraw Hill Publishing Company.

LESSON PLAN 25

UNIT: Collect

LESSON PLAN TOPIC: Make Relocation Measurements

OBJECTIVES: The student will be able to:

1. Identify if the measurements at an accident are of positions which are temporary or short-lived in nature

2. Demonstrate two methods of making relocation measurements, including how, from what point, and to where they should be made.

PREPARATION OF THE LEARNER:

The recording of relocation measurements for a sketch of the collision scene is one of the important functions of an accident investigator in conducting a systematic inquiry into a traffic collision. Proper planning and sketching information is necessary to provide uniformity in reports and to avoid useless detail.

Careful measurements take the guesswork out of locating positions of objects at the scene. Reconstruction of the events of an accident from the first point of perception to the final position of the involved parties is derived from the measurements made by the investigator either at the accident scene or other locations as required.

PRESENTATION:

I. Need for relocation measurements

A. Remove guesswork by recording measurements made at the scene

B. Reconstruction of an accident scene

1. For purposes of recording information
2. For purposes of obtaining evidence

II. What to measure

A. Purpose

1. To be able to relocate the position on a trafficway at a later date if it becomes necessary

a. Reminder—it is always better to have too many measurements than to need one later and not have it

B. Important measurements

1. Area of impact
2. Location of physical evidence

a. Skid and tire marks
b. Debris
c. Other factors relating to the collision

(1) Examples:

(a) View obstructions, etc.
(b) Sign locations

3. Final position of vehicles or injured person

III. When to measure

A. Procedure

1. Determine if the measurement needs to be made
2. Determine the type of evidence present

a. Temporary in nature—last only few minutes
b. Short-lived in nature—may last hours or even days
c. Long-lived or permanent type of evidence

B. General

1. Taking measurements is only part of important duties at the scene

a. Measurements may have to be taken after other duties completed

2. Temporary evidence should be taken first

a. Chalk or crayon may be used to mark the evidence until it can be measured and recorded

3. Check the scene before departing to insure all measurements have been taken

IV. Equipment to measure

A. Materials

1. Tape measure
2. Measuring wheel
3. Pacing measurements (only when no other device is available)
4. Material by which to record measurements

a. Examples:

(1) Clip board
(2) Pencil
(3) Template

V. Measuring distances

A. General

1. Decide what is to be measured
2. Have necessary tools available to accomplish task
3. Have adequate traffic control to assure safety of investigator

B. Procedure

1. Short distances

   a. Use a steel tape

2. Long distances

   a. 100 foot steel tape
   b. Measuring wheel
   c. Odometer of vehicle

VI. Accuracy of measurements

A. Purpose

1. The measurements taken are only as good as the accident site investigator and his ability to use his tools

B. Errors in measuring devices

1. Time and temperature may affect tape devices slightly

C. Errors made by investigator

1. Most errors are made by carelessness

   a. Misreading numbers
   b. Losing count of the number when making long distance measurements

VII. Methods of measuring for locating evidence

A. Location by coordinate method

1. Establish an edge or base line (may be a physical or arbitrary line).
2. Establish a point "o" on base (edge) line.
3. Measure out on base line to a point at right angle to the object to be relocated.
4. Measure perpendicular from base line to the point to be measured.
5. Record measurements.

B. Location by triangulation

1. Select two base points for triangle (e.g., from one permanent point to a second point can be easily established).
2. Measure from each base point of triangle to each point/item/object to be relocated to determine the apex (use "fat" triangle rather than "long, skinny" triangle).

Note: Refer to a simple sketch on a transparency or draw a sketch on the chalkboard using the triangulation method.

3. The triangulation method uses triangles to connect each spot with two permanent objects.

APPLICATION:

1. The class will be taken to a mock accident site.

   a. Accident scene will have physical, evidence present, vehicles, debris, etc.
   b. Each student will demonstrate to the instructor's satisfaction, how to relocate designated objects at the scene.

      (1) Each of the methods shall be used:

         (a) Coordination
         (b) Triangulation

   c. Each student will draw a field sketch to be submitted.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. California Highway Patrol Manual. *Accident Investigation.* Sacramento, California, 1971.

LESSON PLAN 26

UNIT: Collect

LESSON PLAN TITLE: Photograph

OBJECTIVES: The student will be able to:

1. Recognize the potential value of photographs in accident scene investigation.

2. By using photographic techniques correctly, collect photographically all pertinent vehicle data at an actual or simulated (mock) traffic accident crash scene.

PREPARATION OF THE LEARNER:

Prior to taking this course lesson the student will have had a course in photography. This lesson is not intended to teach "how to take photographs" but rather what to take pictures of at an accident.

In any single accident, there are a multiple number of factors called attributes and modifiers that did or could have an effect upon an accident. These factors are important enough that the investigator must be aware of them and be prepared to photograph them for a permanent record as an aid in the total accident investigation.

The instructor must impress upon the learner the necessity and importance of photographic skills. A witness' statement, conditions at the time of the accident, grade or curvature of the roadway, vehicles involved, are examples which may be verified through photography.

The instructor should recall a past experience where photographs verified a fact which would have otherwise been lost.

PRESENTATION:

I. Purpose of photographs

A. To show evidence

B. Recreate the events as seen by both drivers

C. A simple and easy way to record facts

D. Shorten necessary reports (Do not expect photos to replace careful observations and clear statements of facts.)

E. Supplement facts such as measurements and locations

F. Proves statements (e.g., with good photographs, your statements are easily verified)

G. Records things you may have overlooked in the excitement

H. Helps you remember

II. When to photograph

1. Take as many meaningful pictures as time permits. (Remember it is better to have a picture not needed than to need a picture and not have it.)
2. Show damage to vehicle in final resting place as this will show no damage that may result in moving vehicle.
3. Establish elements that may change.

a. Weather conditions

(1) Examples:

(a) Snow
(b) Ice
(c) Cloudy

b. Final resting place of vehicles involved and their positions
c. Visable skidmarks, gouges, smears, debris
d. Establish path of vehicles prior to accident

B. After removal of vehicles

1. Visable tire, skid, scuff, gouges, and debris on scene
2. Show visibility of each driver prior to the collision as far from area of impact as may be practicable
3. Photograph all traffic regulatory signs

a. Examples:

(1) Stop signs
(2) Light signals
(3) Speed zones
(4) Others

C. Later (next day or next week)

1. Light conditions may improve. (You may want to revisit the scene to retake actual scene; clearer scenes of terrain.)
2. Photograph more detailed damage sustained.

III. What to photograph

Instructor's Note: Do not concern yourself with sensational scenes such as bodies, blood, etc. Concern yourself with relevant pictures causing the sensational.

A. General scene

1. Taken from various locations

a. Down centerlines
b. Along curblines

B. Area of impact on roadway

1. Debris, skidmarks on vehicles
2. Location, imprint

C. Skidmarks

1. Show length and direction
2. Include vehicle which caused them

D. Defects of any vehicle involved

1. Contributing factor to the collision
2. May require assistance from mechanic or two service personnel

a. Examples:

(1) Remove wheels
(2) Check brakes

E. Type of condition of roadway

1. Defects and surface
2. Grade
3. Other

F. Traffic control devices

1. Driver's line of sight
2. Functioning

G. Overweight, overheight, or overloaded vehicles

1. Indicated by flattened tire
2. Depressed springs or shocks
3. Others

H. Hit and run (skip) collision

1. Purpose is to identify missing vehicle

a. Blood and damage on suspect vehicle
b. Parts from suspect vehicle

(1) Paint
(2) Metal
(3) Clothing impressions

c. Tire impressions at scene

(1) Use ruler in photo

IV. Where to photograph

A. Place yourself in a position to obtain as much of the "Big Picture" as possible, yet have good, clear photographs.

B. Eliminate as far as possible details that did not play a part in the accident.

C. When possible, relate each photograph with a stationary object such as road markers, buildings, trees, etc., recording exact distance between the stationary objects and accident scene.

D. Show detached parts resulting from the collision in their exact final resting place, recording exact distance from area of impact.

E. Show close-up of damaged details such as tire rubs, paint rub-off and all identifiable imprints.

V. How to photograph

A. Identify objects to be included in overall accident site photograph.

1. Include all physical evidence which may later be important to criminal prosecution and civil litigation.
2. Get everyting in view finder that you want.
3. Leave everyting out you can that did not play some part in the accident.
4. Include fixed objects that will remain after site is cleared, which will later identify the site.
5. Move farther from the site rather than closer.
6. Markers, foreign to the site, to emphasize or indicate location of evidence may be used but be sure to take a similar photograph without the markers.
7. Avoid positions and angles which lead to suspicion or misrepresentation.

B. Calculate the proper focal plane (critical plane of focus)

1. Measure the distance from the first object to the last object to be photographed down the center line of the photograph.
2. Divide this distance into three equal parts and focus on a point 1/3 of the total distance beyond the first object.
3. The type of camera used will vary. If a vernier scale camera is used, measure the distance and set camera accordingly.
4. If a range finder type camera is used, focus on an object 1/3 distance into the scene.

C. Camera to be still

1. Use tripod, hood, top of car, etc. (If car is used, turn engine off.)
2. Use a shutter release cable.

D. Set camera settings

1. F-8 is generally the proper opening. (Experience might prove that a smaller lens opening, F-11, is best.)
2. Cameras and film vary. (AAA speed of film will determine proper "F" stop.)
3. Time setting for multiple flashes.

E. Illuminate objects to be photographed

1. The person in front of the camera holding the flashgun should wear dark clothing and wear nothing which will reflect light, such as a badge, cap piece, etc.
2. Start with object the greatest distance from camera and work toward camera.
3. Flashgun must be held so that it points, flashes, away from the camera.
4. Stand out of line between camera and object to be photographed.
5. Remember to illuminate the sides of the objects which are toward the cameras.
6. Paper clip, etc., can be used to trip the flash.
7. Alternate method of multiple openings for each flash may be used if there is too much light present or if there is too much traffic movement in the area to be photographed.

Instructor's Note: Demonstrate with a camera how to open the camera, flash, close the camera, person flashing moves to next position, open the camera, flash, close the camera, etc.

F. Use a complete roll of film

1. To avoid confusion of having two accidents on one roll and to provide maximum latitudes for changes in lens opening and shutter speeds for better overall coverage.

APPLICATION:

1. On blackboard, draw simulated scene of accident, have student place himself in proper position to obtain desired photographs.

2. Students will identify the physical evidence important to be included in the overall accident scene photograph. Students will calculate the proper focal plane, and indicate it on the diagram as indicated on a handout. The students will indicate on a handout diagram the proper location for the various flashes to illuminate the objects to be photographed.

3. At a mock accident scene, at night, students will identify physical evidence, calculate the proper focal plane, set up a camera with proper settings, properly illuminate and photograph the site. Evaluate the quality of the developed photograph.

SUGGESTED REFERENCES:

1. Adams, Ansel. *Natural Light Photography*. The Fountain Press. London: Morgan, Inc., 1971.

2. Baker, J. Stannard. *The Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

3. California Highway Patrol Films. "Basic Photography" and "Accident Investigation." Sacramento, California: California Highway Patrol, P. O. Box 898.

4. Deu, L. M. *Photographing Traffic Accidents*. Rochester, New York: Eastman Kodak Co., 1968.

5. Knight, George. *Photography Hints and Tips*. The Fountain Press. London: Morgan and Morgan, Inc., 1971.

LESSON PLAN 27

UNIT: Collect

LESSON PLAN TOPIC: Make Speed Estimates

OBJECTIVES: The student will be able to:

1. Perform test skids safely to the satisfaction of the instructor at a specified location

2. Identify and compute radius, superelevation, percent of grade, drag factor, and critical speed of a curve

3. With reasonable accuracy, calculate with a speed nomograph the minimum speed of an accident vehicle from skidmarks, considering the coefficient of friction and the percent of grade, in a variety of simulated accident situations presented by the instructor.

PREPARATION OF THE LEARNER:

It may be necessary for the accident investigator technician to determine within a reasonable degree the minimum speed of a motor vehicle involved in an accident. This may be very necessary when a death or serious injury has resulted from the automobile accident.

Test skids are used to obtain the coefficient of friction between automobile tire(s) and a road surface. Coefficient of friction is used when computing various factors with traffic nomographs or when using various formulas for accident investigation conclusions.

Coefficient of friction is also known as drag factor, skid factor and adhesion factor. This factor occurs when the wheels of a vehicle are not turning, but are locked in position and are sliding (across) on the road surface.

This drag factor or coefficient of friction occurs due to the ratio between the weight of an object and the frictional force generated when in contact with another surface. It is also referred to as the amount of draft that pavement (road surface) places upon that tire.

You should conduct more than one test to assume the correctness of your evaluations or physical demonstrations with the automobile in test skids and/or with a coefficient of friction test wheel or test trailer.

Estimates of speed based on skidmarks can be misleading and inaccurate unless the investigator also considers the coefficient of friction and the percent of grade of the road surface. You learn to combine the facts available to calculate with reasonable accuracy the minimum speed of a vehicle. There are mathematical formulas that can be applied to determine the speed which is involved and time consuming. A simpler approach to the problem is to use a tool called the speed nomograph. The speed nomograph is easy to use and represents the formulas, and when used with care, will give the same results in much less time.

PRESENTATION:

I. Basic definition and symbols relating to skidmarks (6)

A. Skidmarks

1. Marks left on the road by tires as a result of wheels that are unable to rotate, e.g., locked wheels

B. "D" or Distance

1. The number of feet the skid measures

Note: Distance is derived by averaging length of the skids of all four wheels.

C. "S" or Speed

1. Estimate of the miles per hour the vehicle was traveling

D. "F" or Drag Factor

1. The amount of drag that a pavement puts on a tire or tires on a wheel when compared to the weight of the wheel

E. Coefficient — friction

1. Ratio of force necessary to slide an object on a surface at a uniform speed to the pressure of the object against that surface

II. Influence on test skids

A. Road surface materials

1. Various materials due to their composition will result in higher value of friction when in contact with each other.
2. New dry asphalt or new concrete will give the highest percentage of coefficient of friction when in contact with automobile tires.
3. Ice or packed snow will give a low percentage or amount of friction to the sliding tire.
4. Heat always occurs with friction and heat will effect the sliding of a tire upon road surfaces except on very loose gravel or loose soil.
5. Heat up to 1400°F can be generated between a sliding tire and a road surface.

B. Length of slide

1. Heat build-up between tire(s) and pavement will effect the length of slide.
2. At speeds over 35mph when attempting to arrive at a minimum speed you must correct your computing to include the heat build-up.
3. Test skids must be of varying lengths and at various speeds to offset this and to arrive at a true figure.

C. Material of tire(s) and tire treads

1. In test skids the material of the tire(s) will not affect the test unless the tire(s) is unsafe.
2. The same type of tire(s) should be used as the same tire(s) that made the original skidmark.

D. Weather and temperature

1. It is very important to remember in making test skids that they should be made in the same *total* degree of weather as that prevailing at the same time the accident occurred.

a. Examples:

(1) Temperature
(2) Wind

(3) Rain
(4) Snow
(5) Others

2. This is necessary to assure an accurate picture of your results when comparing with the original skidmarks.

E. Weight of car

1. Vehicle weight will not affect the test skid as long as the same type vehicle is used.
2. Even though a difference does occur in total stopping distance before the brakes all lock, a heavy vehicle will stop as quickly as a light vehicle on the same pavement from the same speed after the brakes are locked up.
3. The stopping factor of deceleration of any vehicle depends only on the coefficient of friction and is not dependent on the vehicle weight.

III. Automobile test slide

A. Automobile

1. Select an automobile of the same make and type.
2. If possible, use the vehicle that was involved in the accident.
   Note: Check tires, brakes, steering, etc., first for your safety.
3. Check speedometer for accuracy.

B. Area

1. The coefficient of friction will vary from road surface to road surface even within a few feet on the same type of road surface.
2. You should conduct all test skids as close as possible to the original skidmarks.
3. Make the area of the test skid as safe as possible by blocking off the road and posting signs, cones, and flags for foot and vehicle traffic.
4. Three tests are recommended and test speeds should not exceed 45mph or the set speed limit in any test.

C. The test

1. In all tests observe (or have passengers observe) closely the speed of the vehicle.
2. When reaching the predetermined speed for the test, apply brakes suddenly, apply as hard as possible and hold pedal down till vehicle has stopped completely.
3. Let vehicle set and conduct your measurements (see measuring tire skidmarks).
4. After test recheck the speedometer for accuracy.

IV. Recording test results

A. Measurement must be recorded as soon as possible after the test skid is made.

1. A form that is specially prepared for recording test skids should be readily available.
2. Separate records should be kept for each set of test skids.

B. Measure accurately, record correctly.

C. If the skidmarks overlap, only two skidmarks show such as made when sliding in a straight line (e.g., the rear tire marks overlap the front tire skidmarks.)

D. Remember to subtract the distance from the front wheel tire to the rear wheel tire to obtain a correct measurement.

V. Determining speed from skidmarks using nomograph (6)

A. Discuss and demonstrate use of speed nomograph.

1. Replaces formulas for computing speed of accident vehicle
2. Formulas are time consuming
3. Calculations determined from speed nomograph are accurate within acceptable standard of courts
4. Student can determine the coefficient of friction of a road surface as a result of a test skid by using a speed nomograph

B. Demonstrate technique for calculating minimum speed

1. Distance scale and recording of skid distance on distance scale — accident vehicle

a. Determine distance of each wheel skid.
b. Total skid distances of all wheels.
c. Obtain average distance for all wheels.
d. Mark average skid distance on distance scale.

2. Recording test skid distance on distance scale

a. Determine average distance of test skids.
b. Mark average distance of test skids.

3. Recording test skid speeds on speed scale.

a. Determine average speed of test skids.
b. Mark average test speed on speed scale.

4. Calculate coefficient of friction for level surface test skids.

a. Using straightedge, carefully draw a straight line from test skid distance mark through test speed mark to coefficient of friction scale.
b. Mark the intersecting point on the coefficient of friction scale.
c. The mark on the coefficient of friction scale is the coefficient of friction for the test vehicle.

5. Calculate speed of the accident vehicle.

a. Locate the accident vehicle average skid distance on distance scale.
b. Using straightedge, carefully draw a straight line from the accident vehicle skid distance mark to the mark designating the coefficient of friction for the test vehicle.
c. Mark the point where the line crosses the speed scale.
d. The mark on the speed scale is the minimum speed of the accident vehicle.

6. Calculating speed of accident vehicle if skidmarks are on grade and test skids made on same grade.

a. The minimum speed of accident vehicle is calculated the same as for a level surface.

7. Calculating speed of accident vehicle if skidmarks are on grade and test skids are made on level surface of same material.

a. Calculate coefficient of friction for the test skids.
b. Determine percent of grade of road surface for accident skidmarks.
c. If the skid was uphill, **ADD** the percent of grade from the coefficient of friction of the test skid.
d. If the skid was downhill, **SUBTRACT** the percent of grade to the coefficient of friction for the test skid.
e. Mark the appropriate finding on the coefficient of friction scale.
f. This is the coefficient of friction for the grade.
g. Using a straightedge, carefully draw a straight line from the coefficient of friction mark to the mark designating the accident vehicle on the distance scale.
h. Where the line intersects the speed scale is the minimum speed of the accident vehicle.

APPLICATION:

1. The student should complete a designated number of test skids on various types of road surfaces.

   a. The student will record his results on a form furnished to him.
   b. The student will then compare his results obtained to arrive at an average acceptable to the instructor.

2. Learners will practice the skill of calculating with reasonable accuracy the minimum speed of an accident vehicle using information provided.

Provide learners with speed nomograph forms and conduct the following drill:

1. Determine average distance of skidmarks and mark distance scale.
2. Determine average distance of two or three test skidmarks and mark on distance scale.
3. Determine average of test speeds and mark on speed scale.
4. Determine coefficient of friction for test skids.
5. Determine speed of accident vehicle.
6. Conduct similar drill introducing a percent of grade factor in which test skids were made on level surface.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis.* Springfield, Illinois: Charles C. Thomas, 1967.

3. McFarland, Ross A. "Measurement of Human Factors in Accident Research." *Traffic Digest and Review,* June 1966.

4. Rizer, Conrad K. "Estimating the Speed of a Motor Vehicle in a Collision." *Journal of Criminal Law, Criminology and Police Science,* Vol. 58, No. 1, March 1967, pp. 119-127.

LESSON PLAN 28

UNIT: Record

LESSON PLAN TITLE: Introduction to Methods of Recording Data

OBJECTIVES: The student will be able to:

1. Describe the various methods of recording data regarding an accident scene.

PREPARATION OF THE LEARNER:

There are a variety of methods to use in recording data for reconstruction purposes and to document evidence relating to the accident scenes. An investigator should be accomplished in the use of the methods.

PRESENTATION:

I. Methods of recording accident data

A. Photography

B. Field sketches

C. Interviews

II. Purposes of each method

A. Photography

1. To tie together physical evidence at the accident scene and show them in their proper location
2. To identify objects in relation to the accident
3. Aid in remembering facts
4. Verification of statements
5. Other

B. Field sketches

1. To show evidence exactly as it was observed
2. To locate debris at an accident
3. To show damage to environment
4. To record marks on the highway surface
5. To record measurements related to accident scenes
6. To use in reconstructing the accident
7. Others

C. Interview

1. Provides permanent record of interview
2. To record evidence at the scene
3. To verify or impeach information taken from accident scene
4. Others

APPLICATION:

1. Provide students with an example of each method of recording data, photograph, field sketch and interview, and have him study each for content in relation to the accident. Have student list points of evidence and data as he analyzes each method.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 29

UNIT: Record

LESSON PLAN TITLE: How to Record Via Photography

OBJECTIVES: The student will be able to:

1. Demonstrate specific photographic techniques in recording all the applicable physical evidence present at a mock collision scene

2. Use photographs to document collision areas and physical evidence, and retain photographs or negatives to provide a permanent record for reference and research study.

PREPARATION OF THE LEARNER:

The learner should be aware of new technical developments in the photographic field that could likely increase expertise.

Point out the need for an overall accident scene photograph in recording information. There will usually be many objects at an accident scene which are important to the investigation. These objects must be tied together and shown in their proper location.

Helpful hints for the learner to remember are that photography is an indispensable tool of the investigator; objects photographed have to be material and relevant to critical aspects; photographs should not distort perspective; photographs should avoid misrepresentation either by improper focal length, manipulation of exposure, or improper enlarging technique; include in the photograph permanent identification objects such as curbs, catch basins, power poles, and buildings; and finally, the photographer must strictly adhere to the legal and ethical concept that the photographs expected to be accepted must be true representations.

Photographs are to be utilized to their full capacity in every area of accident prevention and highway safety, driver education, and research areas.

PRESENTATION:

I. Review the importance of collecting facts by photography

II. Requirements necessary for making photographs permanent records

A. Time—day and date

B. Weather

C. Place—scene—object

D. Direction

1. Examples:

a. Compass reading of camera aim
b. Distance from object
c. Height of camera from ground level

E. Film and manufacturer's name

F. Camera

1. Name
2. Lens
3. Focal length
4. Characteristic filter

G. Include some object that will connect photo with accident site

H. When photographing small objects place a ruler beside them

III. Identification of photographs

A. An unidentified photograph is absolutely worthless as evidence

B. Make a permanent record of certain facts for each picture

C. Show on each picture the following:

1. Exact scene
2. Distance from which photograph is taken
3. Compass direction of camera
4. Relate with fixed object with given distance

D. On small detail photographs, always place a scale or ruler along side which will give an exact measurement of the detail

E. Make permanent record file for identifying photos with accident cases

IV. Points to consider in using photographs in recording accident data

A. The photographer must authenticate that the photos are true representations

B. Tape recorder can be used as a tool to assist photographer

1. With a recorder on the scene the investigator can record data about camera location, view, setting, or lens opening, shutter speed, filter use, speed of film, type, and other essential data.

C. Recommended size of picture and under what conditions

1. 8" x 10" or 11" x 14" enlargements should be used and developed in standard developers using normal papers.

D. Use color photos if available

E. Necessity for making a block diagram of how photos were taken

1. Block diagrams can be important to verify authenticity and true representations (a recorder can aid to verify data in the block diagram and its preparation).

V. Policy on release of photographs

A. Each agency will have policy established on the release of photographs

APPLICATION:

1. Plan space for negative files and devise identification numbering system for photos and accident case records.

2. Check file envelopes for information data to verify contents and labeling of same.

3. Using either a simulated (mock) accident scene or an authentic accident scene, the trainee should take designated photographs demonstrating the recording of physical evidence, identify the photographs, demonstrate correct filing procedures, and describe potential uses of them.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Deu, L. M. "Photographing Traffic Accidents." Rochester, New York: Eastman Kodak Co., 1968.

3. Knight, George. *Photography Hints and Tips.* The Fountain Press, London: Morgan and Morgan, Inc., 1971.

LESSON PLAN 30

UNIT: Record

LESSON PLAN TOPIC: How to Record Via Field Sketches

OBJECTIVES: The student will be able to:

1. Correctly draw a freehand sketch of physical evidence from personal observation and from measurements taken from a worksheet of a simulated (mock) accident or an actual accident

2. Draw an accurate factual sketch of the physical site and of the various forms of physical evidence observed at an accident site

3. Reconstruct the accident scene by interpreting the factual information on the sketch.

PREPARATION OF THE LEARNER:

Investigator should assume the attitude of "challenging" an accident. He should attempt to include as much physical evidence in the initial investigation and sketch freehand exactly as observed. He should be able to recognize important physical evidence. The freehand sketch should be recognized as an authentic original document.

There are two reasons for making scale diagrams of accidents. The first is to help figure out what happened; the second, to show somebody the position of the vehicles and other objects better than could be explained by words. The investigator should diagram in each case where one or both of these reasons are present.

The skill in making after-accident situation maps is the culmination or fruits of all our labors in the field. How well this is done is a reflection on professional abilities.

PRESENTATION:

I. Review types of physical evidence (6)

A. Debris

1. Undercarriage dirt

a. Examples:

(1) Undercoating
(2) Rust

2. Vehicle fluids

a. Examples:

(1) Radiator
(2) Brakes
(3) Gas
(4) Oil

3. Cargo

a. Examples:

(1) Liquid
(2) Granular
(3) Other cargo

4. Personal evidence

a. Examples:

(1) Blood
(2) Clothing
(3) Hair
(4) Jewelry

5. Parts

a. Examples:

(1) Broken glass
(2) Chrome pieces
(3) Ornaments

6. Road material
7. Other

B. Damage to roadside objects

1. Broken or scraped guard rails and posts
2. Trees, poles, signs
3. Buildings
4. Other vehicles
5. Bridges
6. Others

C. Tire imprints

1. Prints in liquid substance

a. Examples:

(1) Oil
(2) Water
(3) Gas
(4) Anti-freeze

2. Soft material

a. Examples:

(1) Sand
(2) Dirt
(3) Undercarriage debris

3. Tread marks

a. Examples:

(1) On hard, wet surfaces
(2) In snow or wet sand or mud

4. Ruts
5. Others

D. Marks on highway surface (by metal)

1. Scratches and scrapes on road surface
2. Chips or chunks from pavement
3. Grooves in pavement
4. Furrows in soft material
5. Others

E. Skidmarks and sliding tires (wheels locked or sideways)

1. Grinding of pavement
2. Grinding of tire by rough pavement
3. Erasing
4. Squeeze—wet pavement
5. Smear of soft material or warm bituminous
6. Smear of warmed tire
7. Scrub of tire during collision
8. Furrows in soft material
9. Position of stop may be determined by small piles of material on loose surfaces

a. Examples:

(1) Gravel
(2) Sand
(3) Snow

Instructor's Note: Teacher will "walk through" the process starting with simple and going to more complex field sketches of accident scenes. Transparencies and worksheets for each problem can be used.

II. Techniques for making original field sketches (6)

A. Equipment needed

1. Clipboard
2. Proper forms or paper
3. Measuring devices
4. Pen or pencil

B. Purpose

1. Draw scene as you see it to record all physical evidence

C. Method

1. Draw freehand the entire accident scene recording only physical evidence observed.

a. Do not include irrelevant items (e.g., wreckers)

2. Letter or label all points of evidence to be relocated by measurement.

3. Make relocation measurements using triangulation or coordinate method.

III. Scale drawing of field sketch (6)

A. Selection of scale to use

1. 10 or 20 feet to an inch is most common scales on traffic template.
2. Size of accident scenes and size of form will dictate size of scale to use.

B. Symbols for use on sketches

1. Identify appropriate symbols to use representing:

a. Vehicles
b. Skidmarks
c. Pavement
d. Edges
e. Center lines
f. Others

C. Transfer measurement from rough field sketch to scale drawing.

APPLICATION:

1. By using coordinate method draw freehand sketch.

a. Simple vehicle or object
b. Two vehicles or objects

2. By using triangulation method have class draw a freehand sketch of a single vehicle.

a. Find reference (landmarks) points and record them.
b. Show manhole covers, drains, etc.
c. Show how to fix location of marks by coordination and triangulation.
d. Measure and record—remeasure and rerecord (if enough time).

3. Students will proceed independently with additional scenes from worksheets. Teacher will circulate, ask questions of individuals regarding procedures. Spend more time with students who are having difficulty.

4. Students should be given standard accident investigation form and be asked to sketch an accident site (and redraw to scale) from a mock accident and to label all physical evidence (several when possible).

a. Students to work in pairs at first so more points can be observed and brought out. This will make each student more critical as to what to look for.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois; The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 31

UNIT: Record

LESSON PLAN TITLE: How to Record Via Notes from Interview

OBJECTIVES: The student will be able to:

1. Relate the value of written statements in accident investigation
2. Demonstrate the procedures for recording information obtained in interviews relating to accidents.

PREPARATION OF THE LEARNER:

The accident investigator can often save himself much time and effort by getting complete information at interviews. The best way to accomplish this task is to develop a systematic procedure in collecting information.

PRESENTATION:

I. Review techniques for interviewing

II. Value of written statements in accident cases

A. Written statements are a permanent record of what was said and reminds witness of statements he made at the scene.

B. To document and impeach physical evidence found at the accident scene.

III. Types of witness statements

A. Formal

1. Usually taken away from scene at an office
2. Typed or dictated to a stenographer
3. Question-answer type
4. Witnessed and notarized

B. Informal

1. Taken at scene in longhand
2. Written by witness
3. Written by investigator and signed by witness
4. In narrative form

IV. Procedure for recording the information obtained in interviews

A. Information needed for witness statements

1. Heading should include:

a. Name and address
b. Age and occupation

c. Position of witness (e.g., where he was at time of the accident)
d. Relationship to driver, if any, if none—state so
e. Location of accident
f. Date and time of accident
g. Where and time of accident
h. Name of person to whom statement was given

B. Composition of the body of the statement

1. Informal statements—use narrative form
2. Formal—use question-answer type
3. Identify each page and have witness initial each page

C. Information needed for the closing

1. I have read or had read to me the above statement and it is true to the best of my knowledge and belief

a. Have the witness sign
b. On formal statements have witnesses of the statement present for reading and signing and have them sign the statement
c. If available, have signature notarized

D. Statement summary

1. A condensed version of the statement should be typed and used as a cover page to give investigator an overview of statements

E. Statements after documenting should be kept confidential

APPLICATION:

1. Provide trainees with a taped accident interview session and have each trainee record the essential data, evaluate data, summarize information, and describe documentation process.

SUGGESTED REFERENCES:

1. Accident Report Forms. Local Police Department or Highway Patrol Headquarters.

2. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

LESSON PLAN 32

UNIT: Report

LESSON PLAN TOPIC: Reconstruction Principles and Causation Analysis

OBJECTIVES: The student will be able to:

1. Explain the purpose of accident reconstruction and causation analysis as it relates to the accident investigation
2. Describe the information that is essential to obtain for reconstructing the accident and determining the cause
3. Perform reconstruction techniques necessary for reporting purposes.

PREPARATION OF THE LEARNER:

Show slides of various automobile accidents and distribute corresponding accident diagrams. Explain the quality of each as it relates to the gathering of pertinent information at the accident scene for the purpose of reconstructing the accident and determining the cause.

PRESENTATION:

I. Purpose of accident reconstruction (6)

- A. Safety purposes
- B. Accident prevention
- C. Court presentation
- D. Gather data
- E. Explanation of causes

II. Facts to include when reconstructing an accident scene as they relate to the involved parties, vehicles, and environment (6)

- A. Course of traffic units
- B. Details of damage to vehicles
- C. Injury to involved partner
- D. Marks on roadway or fixed objects
- E. Final position of units
- F. Scientific principles of mechanics and psychology as they relate to the accident
- G. Statement of witness(s)

III. Determine the extent to which accident reconstruction is carried out

A. Facts available

B. Ability of people

C. Needs for the reconstruction

D. Time and money

APPLICATION:

1. Give each student one or more accident reconstruction diagrams and reports of an accident and have him analyze it for content of essential information, clarity, and for future reference of information.

2. Reconstruct for reporting purposes, an accident scene using information supplied by the instructor.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. Collins, James C., and Morris, Joe L. *Highway Collision Analysis.* Springfield, Illinois: Charles C. Thomas, 1967.

LESSON PLAN 33

UNIT: Report

LESSON PLAN TITLE: Report the Investigation of an Accident

OBJECTIVES: The student will be able to:

1. Reestablish the three preceeding functions: identify, collect, and record and relate these to the reporting function
2. List the major uses and characteristics of the accident report form
3. Explain the essential information to be included in the accident report form
4. Outline an accident report for the intended purpose of selecting relevant material for a written or spoken presentation.

PREPARATION OF THE LEARNER:

The students have evidenced understanding of the two-dimensional concept of accident investigation presented in earlier sessions.

They have demonstrated their proficiency in each of the three functions: identify, collect, and record. Each, in its own right, is essential. The function of reporting requires average abilities to describe and express concepts in writing or through speech. The transmittal and communication of accident information is the finished product of the investigation skill.

PRESENTATION:

I. Review characteristics of pre-crash, crash, and post-crash phases of the reconstruction phase of accident investigation

I. Review the performance criteria

A. Identify

B. Collect

III. Review the performance criteria, record accident investigation data, in relation to forming files

IV. Major uses of the accident report form

A. General information (15)

1. The police

a. To compile a record file of the departments accident
b. To determine highway accident locations
c. To formulate enforcement policies
d. To rearrange manpower allocation if and when necessary

2. Governmental bodies to compare accident experiences and thus determine progress of safety programs

3. Traffic engineers to appraise modifications in engineering, control devices, etc.
4. Legislatures as a basis of amending old and passing new laws and ordinances
5. Educators to introduce needed courses on how to train drivers
6. Insurance companies for policy and claim files
7. Universities for research purposes
8. Research associations
9. Motor carriers and vehicle rental firms for claims and analysis
10. Auto clubs to determine insurance functions
11. Manufacturers for vehicle, warranty, and research purposes
12. Medical institutions for emergency room and medical costs and patient records
13. The accident scene investigator to record accident information for each accident
14. Other possible or probable uses for the report

B. Specific uses

1. Information is available for future references (6)

   a. Number of persons involved
   b. Showing where and when accidents occur
   c. Approximate amount of damage done in dollars
   d. Who participated
   e. What they intended to do
   f. What kinds of vehicles were involved
   g. To ascertain how and why an accident happened

2. To provide information to those parties entitled to the information (6)

   a. Some information is confidential
   b. Some information is inadmissable as evidence (e.g., hearsay)
   c. Some information is restricted

3. To provide a data base for statistical analysis

   a. Manpower allocation
   b. Enforcement policies
   c. Prevention and control of accidents
   d. Safety programs
   e. Research by universities, automobile manufacturers, safety councils, highway commissions, etc.
   f. Detection of highway accident locations
   g. Driver licensing authorities
   h. Insurance rates
   i. Legislative changes
   j. Education programs

V. Characteristics of file reports

A. Information in logical order

B. Contain data

1. Scale of scene
2. Phases of reconstruction
3. Photo index

4. Sequence of events
5. Statements

C. Edit for accuracy

D. Summarize final preparation of data

VI. Essential information included in the accident report form

A. When it happened

B. Where it happened

C. Who was involved

D. What was intended

E. Number and description of vehicles involved

F. How it happened

G. Why it happened

H. Description of environment

VII. Outline an accident report

A. Purpose (scope—limitations)

B. Definitions

C. Information required

D. Methods used to obtain information

1. Accident reconstruction
2. Heading—subheadings
3. Data relationships

E. Summary

F. Determine where graphics or visuals are required

Note: Allow for the report proper to be developed by others, i.e., technical writers, speech writers, and also, for presentation to be made by others in an organization.

APPLICATION:

1. Develop check list: Have students identify and list criteria to be used in evaluating a completed accident report form.

(Continued on next page)

APPLICATION: *(Continued)*

A. Criteria

(1) Accuracy
(2) Completeness
(3) Comprehensiveness
(4) Legible
(5) Understandable
(6) Meets needs

B. Class participation: Pass out completed accident reports. Have students evaluate according to determined criteria.

2. Using an instructor-developed outline as a model, the student should develop an outline and select from resource material provided that is necessary to satisfy the purposes of an assigned report of an investigation of an accident.

3. Schedule a work session under office conditions, provide resource material, and have student develop written outline for accident report, determine graphics or visual aids to include and select required materials as note forms and photos to present with the report.

Note: Instructor should establish pacing and provide continuous assistance by means of an instructor-developed model outline.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwestern University, 1971.

2. *Data Coding System for Highway Accident Reports, Final Report.* Washington, D.C.: U.S. Department of Transportation, August, 1969.

LESSON PLAN 34

UNIT: Report

LESSON PLAN TITLE: Prepare and Present Accident Report

OBJECTIVES: The student will be able to:

1. Write a narrative style report for an intended purpose which follows a prepared outline and effectively incorporates graphic and visual materials

2. Orally report the investigation of a highway traffic accident.

PREPARATION OF THE LEARNER:

The written (typed, printed, etc.) report of an investigation expedites the flow and provides information in usable form to initiate and maintain accident countermeasure programs.

One who has been directly and immediately involved in investigation can provide insight and interpretation as none other can. . .however, this unit is not intended to develop professional authors—just highly skilled technicians.

A briefing, compared to a report to be read, is quicker, more economical, and, in many respects, more effective. Listener feedback provides technician assurance of accomplishing purpose of informing for decisions, for action, for corrections. This unit requires no more than a well-thought-out one-way conversation wherein the student knows more about it than his listener(s).

PRESENTATION:

I. Criteria for written report

A. Purpose clear

B. Grammatically correct

C. Summary . . . each aspect supported by information in the body of the report

D. Essential information in body of report

E. Other

Note: The form itself may differ from one organization to another, but they all basically contain the same information.

II. Purpose of written report

A. Provides minimum information

B. Enables one to answer questions about the accident

C. Routine part of the investigation

D. For use by individuals and organizations

E. For use as statistics

F. Official record of the accident

G. Other

III. Criteria for oral report

A. Present only factual information

B. Present in concise manner

C. Draw conclusions based upon fact

D. Speak clearly and distinctly

E. Distinguish between facts and opinion

F. Others

IV. Purpose for oral report

A. To differentiate among facts, opinions, and conclusions

1. Facts

a. Observed occurances or events through the medium of the senses

2. Opinions

a. Results of ability for analyzing causes, a theory, or a guess

3. Conclusions

a. Reasons, judgments, inferences made based upon facts regarding the accident

B. To relate facts observed through the senses—sight, hearing, touch, taste, or smell

C. For interpretation of technical information

D. Others

V. Selection of graphics and visual aids

A. Appropriate for report

B. Clear

C. Concise

D. Other

APPLICATION:

1. Provide students with a copy of a written report and have them analyze for content and against designated criteria.

2. Provide students with an approved outline of a report and previously selected resource material and file items and have students write a narrative style report as if intended for duplication and dissemination.

3. Play selected portions of a tape of an oral report and have students analyze it in regard to points made and techniques used.

4. Have students present a three to five minute report of an investigation of an accident. Record and play back to analyze results. Content will be derived from the outline prepared in the previous lesson.

SUGGESTED REFERENCES:

1. Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police.* Evanston, Illinois: The Traffic Institute, Northwesten University, July 1971.

2. O'Hara, Charles E. *Fundamentals of Criminal Investigation.* Springfield, Illinois: Charles C. Thomas, 1970.

LESSON PLAN 35

UNIT: Report

LESSON PLAN TOPIC: Simulated (Mock) Traffic Accident Investigation

OBJECTIVES: The student will be able to:

1. Conduct a minimum of three accident site investigations of increasing difficulty by applying knowledge and skills acquired in the entire course to simulated (mock) traffic crash sites with complete accuracy compared to the instructor's master investigation.

PREPARATION OF THE LEARNER:

The student must review and recall all the objectives of the previous lesson plans so that he is able to apply all the required skills and knowledge.

PRESENTATION:

I. Review of the lesson objectives for accident investigation

A. Discuss the lesson objectives for the course.

B. Use simulated (mock) accident scene and demonstrate how an investigation should be conducted. (This should be demonstrated at a different session other than the student's individual investigation.)

II. Guidelines for setting up simulated (mock) accident scene

A. Equipment

1. Arrange for vehicles to simulate an accident scene
2. Undamaged vehicles which are electronically driven and crashed is the preferred method of creating a simulated (mock) accident scene
3. Damaged vehicles placed in a simulated accident is an acceptable safe method of accident simulation
4. The various debris must be realistically located at the simulated (mock) accident scene
5. Skidmarks should be made with another vehicle prior to placement of damaged vehicles
6. Items to reflect other physical evidence should be located at the simulated (mock) scene

B. Trainees

1. The instructor should lay out on a table all the equipment and materials needed for the student to conduct the simulated (mock) investigation or provide for other means that the equipment will be available.
2. A script must be written by the instructor so each simulated (mock) scene driver will be able to provide standard information.
3. The student will individually select and obtain from the instructor the necessary equipment and materials.

C. Simulated (mock) accident report

1. The student will be provided with report forms and submit a final report with no errors for each investigation of a simulated (mock) accident scene required for evaluation.

2. The student must reinvestigate any single simulated (mock) scene until he correctly investigates it or similar scenes.

D. Exercise evaluation

1. The instructor will observe each student as he conducts his investigation and by using the evaluation form note any deficiencies in the investigation. (See Appendix Attachment A and Student Study Guide.)

E. Recommendations for setting up simulated (mock) accident scenes of increasing difficulty

1. A single vehicle which simulates the vehicle leaving the roadway and striking an object
2. Two vehicles which simulate a crash site within an intersection
3. Two or three vehicles in a single accident scene with one driver possibly under the influence of alcohol or drugs
4. A multiple vehicle accident within a simulated freeway site for which approximately four or more vehicles are recommended.

F. Master investigation

1. The instructor will write a master investigation which will reflect an absolutely correct report.
2. The master investigation will be the standard against which each student will be evaluated.
3. The instructor should be absolutely sure that any fact, conclusion, or skill was covered in the course content.
4. The instructor must review the simulated (mock) accident simulation.

APPLICATION:

1. The student will have conducted the required simulated (mock) accident investigations without error.

SUGGESTED REFERENCES:

1. Refer to previous notes from class lectures and other simulations. Review the references for prior lessons.

APPENDIX

HIGHWAY SAFETY PROGRAM STANDARD NO. 18

Accident Investigation and Reporting U.S. Department of Transportation
National Highway Traffic Safety Administration

I. *Scope.* This standard establishes minimum requirements for a State highway safety program for accident investigation and reporting.

II. *Purpose.* The purpose of this standard is to establish a uniform, comprehensive motor vehicle traffic accident investigation program for gathering information — who, what, when, where, why and how — on motor vehicle traffic accidents and associated deaths, injuries, and property damage; and entering the information into the traffic records system for use in planning, evaluating, and furthering highway safety program goals.

III. *Definitions.* For the purpose of this standard the following definitions apply:

Accident — an unintended event resulting in injury or damage, involving one or more motor vehicles on a highway that is publicly maintained and open to the public for vehicular travel.

Highway — the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

Motor vehicle — any vehicle driven or drawn by mechanical power manufactured primarily for use on the public streets, roads, and highways, except any vehicle operated exclusively on a rail or rails.

IV. *Requirements.* Each State, in cooperation with its political subdivisions, shall have an accident investigation program meeting the requirements established herein.

A. *Administration.* 1. There shall be a State agency having primary responsibility for administration and supervision of storing and processing accident information, and providing information needed by user agencies.

2. There shall be employed at all levels of government adequate numbers of personnel, properly trained and qualified, to conduct accident investigation and process the resulting information.

3. Nothing in this standard shall preclude the use of other than police officers, in carrying out the requirements of this standard in accordance with laws and policies established by State and/or local governments.

4. Procedures shall be established to assure coordination, cooperation, and exchange of information among local, State, and Federal agencies having responsibility for the investigation of accidents and subsequent processing of resulting data.

5. Each State shall establish procedures for entering accident information into the statewide traffic records system established pursuant to Highway Safety Program Standard No. 10, Traffic Records, and for assuring uniformity and compatibility of this data with the requirements of the system, including as a minimum:

a. Use of uniform definitions and classifications acceptable to the National Highway Traffic Safety Administration and identified in the Highway Safety Program Manual.

b. A standard format for input of data into the statewide traffic records system.

c. Entry into the statewide traffic records system of information gathered and submitted to the responsible State agency.

B. *Accident reporting.* Each State shall establish procedures which require the reporting of accidents to the responsbile State agency within a reasonable time after occurrence.

C. *Owner and driver reports.* 1. In accidents involving only property damage, where the vehicle can be normally and safely driven away from the scene, the drivers or owners of vehicles involved shall be required to submit a written report consistent with State reporting requirements, to the responsible State agency. A vehicle shall be considered capable of being normally and safely driven if it does not require towing and can be operated under its own power, in its customary manner, without further damage or hazard to itself, other traffic elements, or the roadway. Each report so submitted shall include, as a minimum, the following information relating to the accident:

a. Location.
b. Time.
c. Identification of driver(s).
d. Identification of pedestrian(s), passenger(s), or pedal-cyclist(s.).
e. Identification of vehicle(s).
f. Direction of travel of each unit.
g. Other property involved.
h. Environmental conditions existing at the time of the accident.
i. A narrative description of the events and circumstances leading up to the time of impact, and immediately after impact.

2. In all other accidents, the drivers or owners of motor vehicles involved shall be required to immediately notify the police of the jurisdiction in which the accident occurred. This includes, but is not limited to accidents involving: (1) fatal or nonfatal personal injury, or (2) damage to the extent that any motor vehicle involved cannot be driven under its own power, in its customary manner, without further damage or hazard to itself, other traffic elements, or the roadway, and therefore requires towing.

D. *Accident investigation.* Each State shall establish a plan for accident investigation and reporting which shall meet the following criteria:

1. Police investigation shall be conducted of all accidents as identified in section IV.C.2 above. Information gathered shall be consistent with the police mission of detecting and apprehending law violators, and shall include, as a minimum, the following:

a. Violation(s), if any occurred, cited by section and subsection, numbers and titles of the State code, that (1) contributed to the accident where the investigating officer has reason to believe that violations were committed regardless of whether the officer has sufficient evidence to prove the violation(s); and (2) for which the driver was arrested or cited.

c. Information, collected in accordance with the program established under Highway Safety Program Standard No. 15, Police Traffic Services, section I-D, relating to human, vehicular, and highway factors causing individual accidents, injuries, and deaths, including failure to use safety belts.

2. Accident investigation teams shall be established, representing different interest areas, such as police; traffic; highway and automotive engineering; medical, behavioral, and social sciences. Data gathered by each member of the investigation team should be consistent with the mission of the member's agency, and should be for the purpose of determining probable causes of accident, injuries, and deaths. These teams shall conduct investigations of an appropriate sampling of accidents in which there were one or more of the following conditions:

a. Locations that have a similarity of design, traffic engineering characteristics, or environmental conditions, and that have a significantly large or disproportionate number of accidents.

b. Motor vehicles or motor vehicle parts that are involved in a significantly large or disproportionate number of accidents or injury-producing accidents.

c. Drivers, pedestrians, and vehicle occupants of a particular age, sex, or other grouping, who are involved in a significantly large or disproportionate number of motor vehicle traffic accidents or injuries.

d. Accidents in which causation or the resulting injuries and property damage are not readily explainable in terms of conditions or circumstances that prevailed.

e. Other factors that concern State and national emphasis programs.

V. *Evaluation.* The program shall be evaluated at least annually by the State. Substance of the evaluation report shall be guided by Chapter V of the Highway Safety Program Manual. The National Highway Traffic Safety Administration shall be provided with a copy of the evaluation report.

GUIDELINES FOR THE DEVELOPMENT OF BEHAVIORAL OBJECTIVES

This material is to define a behavioral objective, to state the purpose of behavioral objectives, and to present guidelines for the development of behavioral objectives. These objectives are to be developed in relation to the *Highway Traffic Accident Investigation and Reporting: Basic Course—Instructor's Lesson Plans*.

Definition of a Behavioral Objective: A behavioral objective is a specific, precise statement of the type of behavior outcome expected, the conditions under which it is expected, and the level of performance expected which aid in planning, implementing and evaluating the learner.

Purpose of a Behavioral Objective: The purpose of a statement of objectives is to indicate the kinds of changes in the student to be brought about so that instructional activities can be planned and developed in a way likely to attain these objectives; that is, to bring about changes in students.

Writing Behavioral Objectives: A behavioral objective may include:

(a) who will perform the desired behavior (e.g., the accident investigation technician, the learner);

(b) what the learner is expected to be able to do at the completion of the course (e.g., identify factors, apply measuring techniques);

(c) how well the behavior is expected to be performed (e.g., number of errors permitted—give three out of five items; number of times completed—percentage of successful trials, speed); and

(d) under what circumstances the learner is expected to perform (e.g., an oral test; a written test; a written plan).

CHECKLIST FOR DEVELOPING BEHAVIORAL OBJECTIVES

Behavioral objectives should be brief, clear statements that describe instructional intent in terms of the desired learning outcomes on simply educational ends. Any statement of the objectives should be a statement of changes to take place in students. In evaluating your list of objectives, general criteria have been incorporated into this checklist.

This checklist is intended as a diagnostic tool for detecting and correcting errors in the behavioral objectives. Any negative answer indicates an area where improvement is needed. The checklist is also useful as a guide for developing the original list of behavioral objectives.

CHECK LIST

Criteria	Yes	No
1. Does each behavioral objective emphasize a **verb** that requires action on the part of the student?		
2. Is each behavioral objective stated in terms of student performance (rather than teacher performance?) Does it describe what the learner will **do** when demonstrating this achievement of the objective?		
3. Is each behavioral objective stated so that it indicates **terminal behavior** (rather than subject matter to be covered during instruction)?		
4. Is each behavioral objective stated so that it includes only one learning **outcome** (rather than a combination of several outcomes)?		
5. Is there a sufficient number of behavioral objectives to adequately describe the desired achievement of the learners?		

BEHAVIORAL TERMS

I. Illustrative verbs for stating general instructional objectives:

analyze	create	listen	think
apply	demonstrate	locate	translate
appreciate	evaluate	perform	understand
comprehend	interpret	recognize	use
compute	know	speak	write

II. Illustrative verbs for stating specific learning outcomes:

Creative Behaviors

alter	predict	rename	revise
ask	question	reorganize	rewrite
change	rearrange	reorder	simplify
design	recombine	rephrase	synthesize
generalize	reconstruct	restate	systematize
modify	regroup	restructure	vary
paraphrase		retell	

Complex, Logical, Judgmental Behaviors

analyze	contrast	evaluate	infer
appraise	criticize	explain	plan
combine	decide	formulate	structure
compare	deduce	generate	substitute
conclude	defend	induce	

General Discriminative Behaviors

choose	differentiate	isolate	pick
collect	discriminate	list	place
define	distinguish	match	point
describe	identify	omit	select
detect	indicate	order	separate

Study Behaviors

arrange	copy	locate	organize
categorize	diagram	look	quote
chart	find	map	record
cite	follow	mark	reproduce
circle	itemize	name	search
compile	label	note	sort
			underline

Mathematical Behaviors

add	divide	interpolate	solve
bisect	estimate	measure	square
calculate	extrapolate	multiply	subtract
check	extract	number	tabulate
compute	graph	plot	tally
count	group	prove	verify
derive	integrate	reduce	

Laboratory Science Behaviors

apply	dissect	limit	report
calibrate	feed	manipulate	reset
conduct	grow	operate	set
connect	increase	plant	specify
convert	insert	prepare	straighten
decrease	keep	remove	time
demonstrate	lengthen	replace	transfer
			weigh

SUGGESTED REFERENCES FOR WRITING BEHAVIORAL OBJECTIVES

Armstrong, Robert J.; Cornell, Terry D.; Kroner, Robert E.; and Roberson, E. Wayne, eds. *A Systematic Approach to Developing A Handbook Designed to Increase the Communication of Laymen and Educators*. Tucson, Arizona: Educational Innovators Press, Inc., 1968.

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HOW TO GIVE A DEMONSTRATION

I. **Before the Learner Arrives**

1. State the objective.
2. Plan the procedure.
3. Check tools and materials.
4. Prepare necessary visual aids.
5. Practice the demonstration.
6. Have on hand samples of finished or unfinished jobs.

II. **After the Learner Arrives**

1. Arrange the group so that all may see and hear.
2. Explain the purpose of the lesson.
3. Encourage the people in the class to ask questions.
4. Perform at a rate so that the student can see what is taking place.
5. Talk while you are acting.
6. Bring out points on safety.
7. Ask questions as you proceed.
8. Present one method only.
9. Let students participate when possible.
10. Make the demonstration brief.

III. **Check to Insure Learning**

1. Ask summarizing questions at the end of the demonstrations.
2. Let the student perform.
3. Check students for possible need of reteaching.

SURVEY Q3R METHOD*

These five steps of the Survey Q3R Method—Survey, Question, Read, Recite, and Review—when polished into a smooth and efficient method should result in the student reading faster, picking out the important points, and fixing them in memory.

The title for this study skill is abbreviated in the current fashion to make it easier to remember and to make reference to it more simple. The symbols Survey Q3R stand for the steps which the student follows in using the method; a description of each of these steps follows.

Survey . . . . . 1. Glance over the headings in the chapter to see the few big points that will be developed. Also read the final summary paragraph if the chapter has one. This survey should not take more than a minute and will show the three to six core ideas around which the discussion will cluster. This orientation will help you organize the ideas as you read them later.

Question . . . 2. Now begin to work. Turn the first heading into a question. This will arouse your curiosity and thereby increase comprehension. It will bring to mind information already known, thus helping you to understand that section more quickly. The question also will make important points stand out at the same time that explanatory detail is recognized as such. Turning a heading into a question can be done on the instant of reading the

heading, but it demands a conscious effort on the part of the reader to make this a query for which he must read to find the answer.

Read.....3. Read to answer that question, i.e., to the end of the first headed section. This is not a passive plodding along each line, but an active search for the answer.

Recite.....4. Having read the first section, look away from the book and try briefly to recite the answer to your question. Use your own words and cite an example. If you can do this you know what is in the book; if you can't, glance over the section again. An excellent way to do this reciting from memory is to jot down cue phrases in outline form on a sheet of paper.

Now repeat Steps 2, 3, and 4 on each succeeding headed section: that is, turn the next heading into a question, read to answer that question, and recite the answer by jotting down cue phrases in your outline. Read in this way until the entire lesson is completed.

Review ....5. When the lesson has thus been read through, look over your notes to get a bird's-eye view of the points and their relationship and check your memory as to the content by reciting the major subpoints under each heading. This checking of memory can be done by covering up the notes and trying to recall the main points. Then expose each major point and try to recall the subpoints listed under it.

* From *Effective Study*, 4th Edition, by Francis P. Robinson. Copyright 1941, 1946 by Harper & Row, Publishers, Inc. Copyright 1961, 1970 by Francis P. Robinson. By permission of the publishers.

STUDENT OPINION OF TEACHING AND COURSE*

Date _____
Instructor _____

Characteristics of the Instructor

Each of the items below deals with a characteristic of instructors which students feel to be important. Indicate your rating of your instructor by a check at the appropriate point on the scale. The exact point at which you rate is less important than the general impression.

Example:

_____

NOT HELPFUL ACTIVELY HELPFUL

Write in after the question any additional comments that you wish to make. Give examples wherever possible.

1. Is the instructor actively helpful when students have difficulty?

_____

NOT HELPFUL ACTIVELY HELPFUL

Examples or Comments:

2. Does the instructor appear sensitive to students' feelings and problems?

_____

UNAWARE RESPONSIVE

Examples or Comments:

3. Is the instructor flexible?

_____

RIGID FLEXIBLE

Example or Comments:

4. Does the instructor make students feel free to ask questions, disagree, express their ideas, etc.?

_____

INTOLERANT ENCOURAGES STUDENT IDEAS

Example or Comments:

.....

* Adapted from: Wilbert J. McKeachie, *Teaching Tips, A Guidebook for the Beginning College Teacher* (Lexington, Mass.: D. C. Heath and Company, 1969), pp. 247-252.

Based on an evaluation form used by the Department of Psychology at the University of Michigan.

5. Is the instructor fair and impartial in his dealings with the students?

FAVOR SOME — FAIR

Examples or Comments:

6. Is the instructor's speech adequate for teaching?

UNINTELLIGIBLE — GOOD

Example or Comments: (Volume, Tone, Enunciation, Rate, Vocabulary, etc.)

7. Does the instructor belittle students?

BELITTLES — RESPECTS

Example or Comments:

8. Does the instructor tell students when they have done particularly well?

NEVER — ALWAYS

Example or Comments:

9. Does the instructor dwell upon the obvious?

DWELLS ON OBVIOUS — *INTRODUCES INTERESTING IDEAS*

Example or Comments

10. Is the instructor interested in the subject of accident investigation?

SEEMS UNINTERESTED — *SEEMS INTERESTED*

Example or Comments

11. Does the instructor use enough examples or illustrations to clarify the material?

NONE — *MANY*

Example or Comments:

12 Does the instructor present material in a well-organized fashion?

DISORGANIZED — *WELL-ORGANIZED*

Example or Comments

13. Does the instructor follow an outline or a lesson plan to accomplish objectives?

NOT AT ALL — *VERY CLOSELY*

Example or Comments:

14. Does the instructor stimulate thinking?

DULL — *STIMULATING*

Example or Comments:

15. Does the instructor put his material across in an interesting way?

DULL — *VERY INTERESTING*

Example or Comments:

16. Other important characteristics—please specify.

Considering all of the above qualities which are applicable (including those that you added) how would you rate this instructor? (Circle your rating).

EXCELLENT VERY GOOD GOOD FAIR POOR VERY BAD

Now go back over the list and place a check (X) before the five items which were most important to you in making your judgment.

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Each of the following individuals attended one of the five regional workshops and contributed to the development of the lesson plan units. The project staff appreciates and acknowledges their contribution.

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